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COST ACCOUNTS

AN EXPLANATION OF PRINCIPLES

AND

A GUIDE TO PRACTICE.

BY

L. WHITTEM HAWKINS.

CHARTERED ACCOUNTANT,

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PREFACE.

THE purpose of this work is to explain in general terms the principles relating to the ascertainment of manufacturing costs, and to make clear the operation of those principles by means of examples.

The method followed is to divide the book into two parts, of which the first deals with the subject in its broad outlines. The elements which go to make up Cost are considered and defined, and each element is then dealt with in turn. Its treatment in the Cost Books is first explained, and then its position in the General or Financial Books. In this way, the system is built up piece by piece, and a scheme is outlined which fulfils the *minimum* requirements of a manufacturer or contractor. The next step is to review what has been set forth, and to show the relationship which exists between the Cost Books and General Books. This is illustrated by means of a diagram which reproduces graphically the descriptions given in the text.

The second part consists mainly of a series of suggestions, showing how various parts of the system may be elaborated in order to secure greater minuteness and accuracy.

The whole work is illustrated by a set of forms, which are specially bound in such a way that they will fold out to lie side by side with the text, thus rendering reference

easy, and avoiding the annoyance of losing one's place each time the text is compared with the forms.

The author's system of costing is such that the Cost Books and the General Books are co-ordinated and brought into agreement. This desirable result is accomplished with very little additional labour, and without interfering with the completeness of either of the two sets of books, which are independent and can be balanced separately. It removes a defect which exists in systems which have not this correlation, and which show one result in the Cost Books, and another, and generally worse, result in the General Books.

It has been well said that "the ordinary Trading Account is a locked storehouse of most valuable information, to which a Cost System is the key." To ensure that the key will always fit the lock, agreement between the Cost System and the General Accounts should be provided for.

The methods illustrated in the following pages will be found suitable in most details for those whose operations partake of the nature of construction—such as, for example, engineers, builders, contractors, vehicle-builders, and furniture-manufacturers, and also for printers and publishers. Some attention is also given to manufacture by process, but it is impracticable to set out a system of costing for manufacture by process, in anything like detail, without making special reference to each individual trade, which would require, not one volume, but a series.

33 ST. SWITHIN'S LANE, E.C.

May 1905.

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PART I.

1



CHAPTER I.

INTRODUCTION.

THE object of keeping Cost Accounts is to enable a manufacturer or contractor to ascertain the cost of every article he produces and of every contract he undertakes. With this information at his command he is enabled :—

1. To regulate his selling-prices according to cost, so far as the conditions of supply and demand permit.
2. To frame his estimates and tenders with a degree of accuracy which will materially help him to avoid making unduly low quotations, which would result in loss, or unnecessarily high ones, which would permit competitors to undersell him.
3. To find out which branches of his business do or do not pay, and whether it is costing him more to produce any article than he could buy it for.
4. To establish a standard of cost for stock articles, and so provide a check on their cost for the future.
5. To lay his finger on weak places, and so detect waste of material and inefficient workmanship and management.

These advantages cannot be gained without some trouble and expense. It is useless for a manufacturer to set about keeping Cost Accounts unless he is prepared to devote some time and money to securing their efficiency. A rough system may be inaugurated without additional expense, which may give results of which the accuracy or inaccuracy can never be determined because of the incompleteness of the system. It will, however, probably be better to do without Cost Accounts altogether, than to place reliance on a system which shows results that may be entirely misleading.

On the other hand, it is quite possible to err in the direction of over-elaboration, and to spend so much time and money in the ascertainment of costs that net profits are seriously reduced.

This treatise will, therefore, be devoted to an explanation of methods whereby a minimum of intelligently-directed work may be made to show reliable results.

Before passing on to a consideration of the details of the problem, a word is needed on the importance of the results disclosed by the Cost Accounts agreeing with those shown by the General or Financial Accounts. That is to say, that the results of all the jobs dealt with in the Cost Accounts should, in the aggregate, agree with the result shown by the Trading Account, so far as that account relates to manufacture.

If there is a discrepancy between the two, one or both must be wrong, and *it is usually the Cost Accounts which are in error*. Moreover, the Cost Accounts are apt to give the more favourable apparent results.

The reason is not far to seek, for the General Accounts deal with facts, while the Cost Accounts are largely dependent upon estimates. This gives play to two failings of human nature—the tendency to take too sanguine a view of things, and the liability to accidental omission of elements of cost. Some means of ensuring practical agreement between the two sets of accounts is therefore very desirable. To that end the system outlined in these pages is directed.

The method employed is to take each section of the problem in turn, and to show first how it is to be solved in the Cost Accounts, and next, how the entries can be brought into relation with the corresponding portion of the General Accounts. In this way the parallelism of the two systems is illustrated by parallel explanations.

So far as the accounts of individual jobs and contracts are concerned, the methods of costing are those in common use, reduced to their simplest form and fully explained. They may be put into operation without reference to those portions of the treatise which show how they are brought into relation with the General Accounts.

Considered as a whole, however, the author's system differs from most others in being *based on double-entry principles*. Just as in ordinary bookkeeping the adoption of those principles enables the bookkeeper to apply a check on the accuracy of his work and to keep nominal accounts and to raise a Trading Account, so their application to cost accounting enables the cost clerk

not only to check the accuracy of his work and to raise an account corresponding with the bookkeeper's Trading Account, but *also to keep his accounts parallel with the counting-house books*. In the two sets of books, pairs of nominal accounts are provided, of which some pairs are, by the operation of the system, in exact agreement, and of which the remainder should agree within narrow limits. If it were practicable to account for materials with the same exactness as money, and to estimate the percentage of Establishment Expenses to Wages with minute accuracy, the agreement between the pairs of accounts would be perfect, but it is well known that in these matters some latitude must be allowed. The divergence between the two systems is thus reduced to narrow and, what is more, *known* limits.

It is assumed that the reader has a practical knowledge of the principles of double-entry bookkeeping, and will understand the application of those principles to Cost Accounting.

The elements of cost with which we have to deal are divisible into two main classes, which resolve themselves into sub-divisions:—

I.—Direct Charges or Prime Cost.

- (a) Direct Wages.
- (b) Materials.
- (c) Chargeable Expenses.

II.—Indirect Charges or Oncost.

- (a) Works Expenses.
- (b) Office Expenses.

The total of Prime Cost and Oncost is Gross Cost or Cost of Production.

The task before us is to consider how these several elements, which are contained in totals in the Trading Account, may be split up and distributed over the individual jobs and contracts upon which they are being expended.

The author has endeavoured to explain the subject in general terms which will be capable of application to many kinds of manufacture. It is not practicable, in a work of this size, to give detailed instructions which would supply all the requirements of all trades, and endeavour has been directed to giving a lucid *explanation of principles*, accompanied by examples and forms which serve as *guides to practice*.

At the end of the book will be found a set of forms which can be opened out and read side by side with the text referring to them.

CHAPTER II.

DIRECT WAGES IN THE COST ACCOUNTS.

In regarding wages as an element of cost in manufacture, it is convenient to draw a line of demarcation between the wages of workmen directly employed on the manufactured article, and of those who, though not directly employed on a particular article, are engaged in occupations necessary or incidental to manufacture. The distinction is convenient, because the Direct or Productive Wages can be *allocated definitely*, as part of the cost of the article upon which the workmen are employed, while the Indirect or Unproductive Wages are an expense which must be *spread over* the cost of various articles. In this chapter, only Direct Wages will be dealt with, and Indirect Wages will be taken later as one of the expenses to be covered by Overcost.

In order that each job may be charged with the wages directly expended upon it, each workman should keep a Time Sheet (Form I.) showing how and upon what jobs his time has been spent. To facilitate this, it is usual to give each job a number, and to instruct the workmen to book their time to the number of the job upon which they are engaged. In this way the Time Sheet is the original record upon which we depend for a correct allocation of wages to individual jobs. Care should

therefore be taken that sufficient supervision is exercised by the Foreman to ensure accuracy in making out the Time Sheets.

Since several workmen may be employed on one job, and one workman may be employed on several jobs in a week or even a day, it would be a difficult and tedious task to charge the time of each man to the job, direct from the Time Sheet. Some means of classifying and analysing wages is required, and for this purpose the Wages Abstract (Form 2) is introduced. It may take the form of a bound book or loose sheets. It contains columns which are filled up each week from the analysis at the foot of the Time Sheet.

Particulars of the work upon which the workman has been engaged are inserted in the day column of the Time Sheet, and the number of ordinary hours and hours overtime are added. Overtime usually counts as time and a quarter or time and a half, and the total equivalent in ordinary hours is placed in the last column. Thus, 8 hours ordinary time, plus 2 hours overtime at time and a quarter $= 8 + 2 + \frac{1}{2} = 10\frac{1}{2}$ hours, which is the amount for insertion in the last column.

Spaces are provided in the Time Sheet for the signatures or initials of the persons responsible for its accuracy. In the lower part on the right-hand side is a space showing the gross earnings, deductions and net amount payable. These concern the General Accounts, and form the basis for writing up the Wages Book.

On the left, columns are provided for the analysis of the wages over jobs. The job numbers are inserted in the top row of spaces, and under them the "total equivalent" in hours taken from the last column in the upper part of the sheet. The total under each job number multiplied by the workman's hourly rate of wages, gives the amount chargeable to the job. The cross total of these amounts should equal the gross amount earned. Fines and other deductions do not concern the Cost Clerk in making the analysis.

If the workman has been engaged upon unproductive work, his time so employed should be carried into the analysis, not under a job number, but under some initial or symbol used to designate the class of work in question (See p. 94.)

In the Wages Abstract, the job numbers are placed at the head of the money columns, and the amounts chargeable to each, as shown by the Time Sheets, are inserted below; also the workman's number for reference, if required.

In this way the monetary value of all the Direct or Productive Labour for the week is first dissected and then collated into separate totals for each job. A Summary of these totals, with their respective job numbers, should be made at the right-hand side of the Wages Abstract. The total of the Summary should agree with the total of Productive Wages for the week, as shown by the Wages Book described in the next chapter.

The next step is to carry the totals under each job number to the debit of the corresponding Job Accounts in the Cost Ledger (Form 3). This may be done by posting direct from the Summary. The Job Accounts will be debited in the Wages column, and the total of the Summary should be posted to the credit of Direct Wages Account in the Cost Ledger, *thus securing double-entry.*

Those who have an objection to posting to a Ledger from a loose sheet may prefer to copy the Summary into the Cost Journal in the form of a Journal entry :—

Sundries—				Dr.		
To Direct Wages	£54 12 0
Job, No. 1,001	£1 18 1	
„ „ 1,024	1 18 10	
„ „ 1,002	0 4 2	
&c., &c.						

The Cost Journal is exactly similar in form and principle to the ordinary Journal used by double-entry book-keepers, and needs no description.

It is to be observed that not only is the Cost Ledger kept on double-entry principles, but that the Direct Wages Account referred to above agrees with the account of the same name in the General Ledger, *thus furnishing a link or means of agreement between the Cost Accounts and the General Accounts.*

In some trades there are objections to the *workmen* using Weekly Time Sheets, since it is difficult to get them to make the necessary entries day by day, and, unless this is done, the Time Sheet has to be entered up

at odd times or at the end of the week, with results which are not conducive to accuracy. Weekly Time Sheets, if used by the workmen, are also apt to become creased and soiled to the point of illegibility before they come to the hands of the Wages Clerk.

To surmount these objections Daily Time Sheets (Form 1a) are introduced. These should be filled up daily by the workmen, signed by the Foreman, and sent in to the office every night. In this way greater accuracy and cleanliness are secured.

The Daily Time Sheets should be checked by the Timekeeper or Wages Clerk with the Timekeeper's Book or mechanical Time Recorder, as the case may be.

They should then be copied *daily* into the Weekly Time Sheets (Form 1), so that the work may not remain over until the end of the week. From this point the procedure is the same as that described in the early portion of this chapter.

When wages are paid on the basis of piece-work instead of time, the Time Sheet will be replaced by a Wages Ticket of slightly different form.

CHAPTER III.

WAGES IN THE GENERAL ACCOUNTS.

THE CASH BOOK.

If it is practicable to draw each week a cheque for the exact amount of wages due on pay-day, so much the better. It will then be a simple matter to post the amount of the cheque to the debit of General Wages Account.

When this is not practicable it is still easy to obtain a single posting. Thus, if it is known that the wages will come to about £475, a cheque should be drawn for a rather larger amount, say, £480, and entered in the Cash Book, dropping a line after writing in the words "By Wages":—

Jan. 27.—By Wages	..	..	..	..	..
	..	..	..	..	..	£480 0 0

When the Wages Book has been made up, the wages are found to amount to, say, £474 16s. 8d., which leaves £5 3s. 4d. in hand. This amount should be handed over to the Petty Cashier, and the Cash Book entry should be completed as follows:—

				£	s	d		£	s	d
Jan. 27.—By Wages..	..	..	..	474	16	8				
" " Petty Cash	..	..	..	5	3	4		480	0	0

When the Cash Book has no column available for splitting up the amount of the cheque, it is best to enter the amount *in pencil* first, and fill in the component items afterwards in ink, bracketing them together to show that only one cheque was drawn :—

Jan. 27.—By Wages	..	..	..	..	£	s	d
„ „ Petty Cash	..	..	..	..	474	16	8
					5	3	4

In one of these ways a single debit to General Wages Account can be made without difficulty.

Some bookkeepers introduce a Wages Cash Book, to which the whole amount of the wages cheque is debited, and the wages paid are credited, leaving a balance which is represented by cash in hand. This is an unnecessary increase of books, and has the further disadvantage of creating an additional cash balance, which has to be kept separate.

THE WAGES BOOK (FORM 4).

The Wages Book (or Wages Sheet, if preferred) is compiled from the workmen's Time Sheets. It should contain a complete list of all wages payable, and may also include salaries.

It should show the gross earnings of each workman, also deductions, and the net amount payable. The cross-addition of the totals of the several columns should be checked.

To facilitate the classification of wages, additional

columns may be added, but it is simpler to *group the names according to occupation*, and make a total for each group. The grouping should be under some such heads as these :—

Direct Wages (<i>i.e.</i> , those chargeable direct to Jobs).			
Repairs to Plant	..	..	..
Erection of Plant	..	..	..
Repairs to Buildings..	..	..	..
Erection of Buildings	..	..	..
Boilermen, Enginemmen, and Stokers			
Foremen and Timekeepers	..	..
Sundry Labour	..	..	..
Drawing Office Salaries.			
General Salaries.			

} Indirect Wages.

When the Wages Book is written up in this way it will be unnecessary to use a separate Wages Allocation Book, as the requisite classification is obtained by the suggested grouping. A weekly summary of the totals of the groups gives the same information as would be obtained by using an Allocation Book.

When a workman has been engaged during the week on two classes of labour, the amount of his earnings requires to be divided so that the proper amount may appear under each heading. As he should only come up once for his money, the full amount due to him should be placed *in red ink* against his name the first time it appears in the wages list for the week. To guard against any risk of paying him the amount opposite his name where it occurs the second time, a warning red-ink cross should be placed against it.

THE JOURNAL.

When a correct analysis of wages has been made, a Summary should be entered in the Wages Book and passed through the General Journal, as for instance :—

Sundries—				<i>Dr.</i>			
To Sundries			
Direct Wages	£300	1	9
Repairs to Plant	15	4	2
Erection of Buildings	50	7	1
Sundry Labour	80	11	5
Salaries	35	15	0
General Wages	£474	16 8
Fines	8	6
Club	6	14 3

When this entry is posted to the General Ledger the General Wages Account will be cleared, and the other accounts referred to in the Journal entry will each receive their proper debit or credit.

The amount debited to Direct Wages Account should be the same as the amount credited by the Cost Clerk to the corresponding account in the Cost Ledger.

CHAPTER IV.

MATERIALS IN THE COST ACCOUNTS.

THE problem of charging materials to the jobs on which they are used is much more complex and difficult than that presented by Direct Wages. Wages can be readily converted, even when divided up, into terms of money. There is not the same facility in dealing with materials, as anyone who has undertaken the task will testify. Materials should be accounted for in quantities as well as charged up to the jobs in money values, and the amount of time and labour which may be expended upon the task is practically only limited by considerations of the expense involved. In practice, some discrepancy in accounting for materials is sure to occur, and the aim should be to keep that discrepancy within narrow limits without an undue expenditure of time and labour.

DIRECT GOODS OR MATERIALS BOUGHT FOR A
SPECIFIC JOB.

This is the simplest class of transaction to deal with. The Cost Clerk has only to make an entry in the Cost Journal from the Invoice, thus:—

Job No. 1,001	..	..	..	Dr.	£25	0	0	
To Direct Goods..	..	..	..	..	..	£25	0	0
Invoice No. 2,374								

or if there are several jobs concerned:—

Sundries—				Dr.				
To Direct Goods..	..	..	..	..	..	£200	0	0
Job No. 1,001	..	..	..	..	£20	0	0	
„ „ 1,002	..	..	..	..	75	0	0	
„ „ 1,003	..	..	..	..	105	0	0	

The postings are to the debit of the Job Account in the Materials column, and to the credit of "Direct Goods Account," which should be opened in the Cost Ledger.

When part of a contract is sub-let, the amount of the sub-contract should be charged to the job as Direct Goods.

The materials which can be dealt with in this way may be but a small proportion of those which are used. A store of materials is kept, and if these are to be accounted for with any approach to accuracy, there should be a Storekeeper. From him should come the record of materials which he receives into stores and gives out or issues to jobs.

Before passing on to a consideration of this matter, it will be as well to make clear the distinction between the term "Stores" and "Stock" as used in Cost Accounts. "Stores" stands for raw material and material *bought* in a partly manufactured condition to be used in the process of manufacture carried on at the Works. "Stock" includes the finished product of the Works ready for sale, and objects which have been completed *at the Works* up to a point and put away until required for further treatment or assembling. One cannot, however, avoid using the term "Stock of Stores" to indicate materials on hand.

STORES.

The question for immediate consideration is, how the materials given out by the Storekeeper are to be *charged to the jobs* on which they are used. To see that *all the*

materials are accounted for is a different matter, and although important, is for the moment subsidiary, and is, therefore, left over until Chapter XVI. is reached.

The Storekeeper cannot, of course, be allowed to do as he likes about the issue of Stores, but should only be permitted to issue them on the written authority of some responsible person. This authority usually takes the form of a request addressed by the Foremen or other officials to the Storekeeper for the delivery to bearer of certain materials, and is variously known as a Requisition Warrant, Docket, Issue-Note, or Ticket. In this work the word "requisition" is used, as being the most usual.

REQUISITION (FORM 5).

Each Requisition should bear the signature of a Foreman or other responsible person, who usually keeps a counterfoil or duplicate copy for reference. The better method is to use books containing perforated Requisitions with duplicate leaves, numbered to correspond, and a carbon-sheet to go between the two.

As several books may be in use at the same time, care should be taken that no two books are numbered alike, or confusion would result.

When it is found that the use of books takes up too much of the Foreman's time by requiring his attention at frequent and irregular intervals, an alternative course is to allow workmen to requisition materials on their own responsibility. They must have access to a supply of blank forms, and it is impracticable to provide for

copies or duplicates in this case. The Foreman should exercise a strict supervision over the Requisitions so used by the workmen, and should initial them as correct at least once a day.

When the latter method is adopted, the Storekeeper should be provided with a numbering-machine, with which he should impress consecutive numbers on the Requisitions as they come to his hands.

The Storekeeper retains the Requisitions in exchange for the materials supplied. If any portion cannot be supplied, the workman should see that the Requisition is corrected to agree with what he actually receives.

The Storekeeper, if allowed to know prices, should price the Requisitions before passing them on to the Cost Clerk. He should also make the extensions, if time permits. The Cost Clerk should check both prices and extensions.

CREDIT SLIP (FORM 6).

In some kinds of manufacture it must frequently happen that the quantity of materials required for a job cannot be exactly estimated beforehand, and that a larger quantity is requisitioned out than is actually used. In that case, *the portion left over should be returned to Stores.*

The materials returned should be accompanied by a Credit Slip or Stores Returned Note, taken from a counterfoil book similar to that used for Requisitions. The Credit Slip should be filled up with particulars of the materials returned, and signed by the Foreman.

The Storekeeper, on receiving it, should check it with the Materials returned. He should then price it, and pass it on to the Cost Clerk.

Credit Slips should be distinguished from Requisitions by being printed on paper of a different tint.

MATERIAL TRANSFERS.

The purport of the words italicised above is to emphasise the undesirability of passing on surplus materials from one job to another. To do so may be convenient, but is very likely to cause error, as, unless the transfer is recorded, the receiving job does not get debited and the imparting job does not get credited. For this reason, direct transfers of this kind should be strictly forbidden, if the prohibition would not result in great inconvenience. If, on the other hand, direct transfers cannot be avoided, a form called "Material Transfer," similar to the Requisition, should be provided. It should contain particulars of the transferred materials, and the numbers of the imparting and receiving jobs. It should bear the signature of the Foreman of the receiving job, who should hand the Transfer on to the Cost Clerk. The latter should price it out and make a Cost Journal entry to give effect to the transfer of materials, debiting the receiving and crediting the imparting job.

THE MATERIAL ABSTRACT (FORM 7).

The Material Abstract is introduced as a means of collating all the Requisitions and Credit Slips relating to each job.

It contains columns which are headed with the job numbers; under each job are inserted *in black ink* the serial number and value of each Requisition relating to it.

Before the Requisitions are entered in the Abstract they should be sorted out into numerical order, and any missing ones should be at once enquired for. For this purpose, reference to the duplicate in the Foreman's possession may be necessary.

To prove that all the Requisitions have been analysed into the Abstract, a list of them showing serial number and amount only may be made, and the total of this list should agree with the total of the Abstract. If they do not agree, the discrepancy may be quickly found by calling back the items in the Abstract to the list.

The Credit Slips have next to be analysed in the same way as the Requisitions. They should first be sorted into numerical order, and then entered in the Abstract *in red ink* and subtracted from the total of the Requisitions under the corresponding job number. The net totals will then show the debits to each job for the week.

When it occurs that during the week more materials have been returned from a job than have been issued to it, the red ink entries will preponderate over those in black ink under the number of that job. The excess should be written in *red ink*, and represents the amount which should be *credited* to the Job Account.

A Summary of the totals under the job numbers should then be made at the right-hand side of the Abstract, keeping in separate columns those which represent respectively debits and credits to jobs. The difference between the totals of these two columns is the net amount of stores issued.

Postings to the Cost Ledger are made from the Summary. Debits to Job Accounts will be posted into the Materials column in black ink, and credits to Job Accounts should be posted *in red ink* into that column to show that they are to be deducted from, and not added to, the other items in it. The difference between the two columns of the Summary should be posted to the credit of Stores Account in the Cost Ledger.

The Summary may be passed through the Cost Journal by those who prefer to do so.

The compilation of the Material Abstract is much facilitated by making a fixed rule that *no Requisition or Credit Slip shall relate to more than one job.*

The method described is simple and concise, but has the disadvantage of furnishing weekly totals but no particulars in the Materials column of the Cost Ledger. This is referred to further at p. 74.



CHAPTER V.

MATERIALS IN THE GENERAL ACCOUNTS.

IN order to preserve the necessary correspondence between Cost Accounts and General Accounts, there should be in the General Ledger two accounts for materials, viz. :—

Direct Goods Account.

Stores Account.

To the Direct Goods Account will be charged materials purchased for a specific job. To the Stores Account will be charged all materials which are passed into the Store-keeper's hands when purchased.

To effect the requisite analysis of Purchases, they should be passed through the General Journal, or an Analytical Invoice Book should be employed containing (amongst others) columns headed "Direct Goods" and "Stores."

INVOICE STAMP (FORM 8).

The matter will be simplified by having an Invoice stamp, which should be impressed on all Invoices inwards, and so filled up as to show the account to which the goods are to be charged. (Form 8 contains details which

do not concern the Cost Accounts, but are necessary to record the proper checking of the Invoice.)

All Invoices which have been charged to Direct Goods should be handed over to the Cost Clerk, and by him entered up in the Cost Books as shown in Chapter IV.

With Invoices charged to Stores the Cost Clerk has at first nothing to do, as he is not concerned with the materials until they are issued to jobs. He will, however, want the Invoices later in order to price the materials issued, or to write up his Price-Book (see p. 107).

SALE OF STORES.

Stores of materials are usually kept for the purposes of manufacture, and not for sale. Occasional Sales may occur, and should be credited to the Stores Account in the General Ledger. The profit on such Sales will generally not be large enough to vitiate the account as a basis for checking the consumption of materials.

CHAPTER VI.

CHARGEABLE EXPENSES.

IN THE COST ACCOUNTS.

THE term "Chargeable Expenses" means expenses which are directly attributable to a particular job. They occur chiefly in regard to jobs executed wholly or partially at a distance from the Works. Travelling and hotel expenses, gratuities, and hire of special plant are examples of expenses chargeable or attributable to a particular job, although they are not chargeable in the sense of justifying an addition to the contract price, in which they would previously have been allowed for.

Particulars of any chargeable expenses incurred should be furnished by the counting-house to the Cost Clerk, who should pass the items to the debit of the jobs concerned, and to the credit of his Chargeable Expenses Account by means of a Cost Journal entry :—

Sundries—				Dr.		
To Chargeable Expenses	£15	4 9
Job. No. 1,001	£0	8 6
" " 1,003	14	5 4
" " 1,005	0	10 11

The debits should be posted in the Chargeable Expenses column of the job, and the credit to Chargeable Expenses Account in the Cost Ledger.

IN THE GENERAL ACCOUNTS.

All that is necessary is that a General Ledger Account entitled Chargeable Expenses should be opened, which will be debited from the Cash Book, Petty Cash Book, and perhaps occasionally from the Invoice Book. These books should have columns headed Chargeable Expenses.

The Cost Clerk should be periodically advised of all debits to Chargeable Expenses Account in the General Ledger, with due particulars, and should pass the corresponding entries through the Cost Journal to the Cost Ledger, and will then have a Chargeable Expenses Account of his own agreeing with that in the General Ledger. In this way the correspondence of the two systems with one another is maintained.

ROYALTIES PAYABLE.

These may be dealt with as Chargeable Expenses in both Cost and General Accounts. The entry in the Job Account should contain the word Royalty to distinguish it from other expenses.

SPECIFICATION FEES.

Fees paid to obtain a copy of the specification for a contract to be tendered for are not chargeable expenses. They are returnable when the tender is delivered, and have nothing to do with Cost Accounts. An account entitled Specification Fees should be opened in the General Ledger, and to it all fees paid should be debited, and all fees returned credited. The balance then represents fees which have still to be recovered.

CHAPTER VII.

THE RELATIONSHIP BETWEEN THE COST ACCOUNTS AND THE GENERAL ACCOUNTS.

A SIMPLE method of debiting Job Accounts with Direct Charges has now been explained.

Before proceeding to a consideration of Indirect Charges, a few remarks on the advantage of having the Cost Accounts and General Accounts separate from, but in accord with, each other will not be out of place.

The Cost Books have been seen to consist of the Cost Ledger and Cost Journal, with the Wages Abstract and Material Abstract used as separate Journals or auxiliary to the Cost Journal. (*See Forms 2 and 7.*)

The General Books of Account have in no way been cut up or rendered less efficient, but have only been modified to the extent of providing in the General Ledger certain accounts which correspond with accounts in the Cost Ledger.

Thus, in the General Ledger we have accounts for Direct Goods, Productive Wages, and Chargeable Expenses, which agree exactly with the corresponding accounts in the Cost Ledger. So far as these are concerned, we have ensured uniformity of the results as shown by the two systems, since both deal with the same figures.

When we come to the Stores Accounts, we find a correspondence of a different kind. In the General Ledger we have a record of materials *put into Stores*, and in the Cost Ledger a record of materials *used out of Stores*. If we credit the Stores Account in the General Ledger with the value of stores on hand, the remaining debit balance shows the value of stores which should be accounted for in the Cost Accounts. If this figure agreed exactly with the credit balance of Stores Account in the Cost Ledger, we should still have perfect correspondence between the two systems. In practice, however, such accuracy is not attainable for many reasons, which will be apparent when the difficulty of accounting for a miscellaneous collection of materials with the same exactitude as money is considered. Opportunities for clerical errors are numerous, especially as Foremen and Storekeepers are usually comparatively uneducated; waste and theft of materials may occur; prices vary from time to time, so that materials bought at one price have to be issued at another; and there are other loopholes for error which will occur to those who have had experience in balancing Stores Accounts.

In practice, then, there is sure to be a discrepancy, not necessarily a shortage, on the Stores Account, and to this extent the Cost Accounts and General Accounts will not agree. The amount of the discrepancy is, however, ascertainable, and forms an element in the reconciliation of the two sets of accounts, which is explained later.

The Cost Ledger, being kept on double-entry principles, can be balanced separately. *No entry in the General Books*

should be posted to the Cost Ledger, and no entry in the Cost Books should be posted into the General Books. Violation of this elementary rule would, of course, destroy all possibility of separate balancing.

The purpose of separating the two systems is to preserve the Trading Account in the General Accounts system. If the Cost Accounts were incorporated with, and formed part of, the General Accounts, Wages and Materials would be debited to Job Accounts, and could not also remain as debits in Wages Account and Purchases Account, or we should have triple-entry and confusion.

Wages and Purchases would therefore disappear from the General Ledger wholly or in great part, and these elements of the Trading Account would cease to exist.

Also, if Completed Contracts and Sales were credited to their respective Job Accounts, they could not remain as credits in Completed Contracts and Sales Account, and another element of the Trading Account would be lost. The Trading Account would begin with a credit, "By Gross Profits."

In the system outlined in this treatise the General Ledger Accounts are left undisturbed, but are brought into relation with the Cost Ledger Accounts. This secures *correspondence without interference*.

CHAPTER VIII.

INDIRECT CHARGES AND ONCOST.

IN addition to Productive Wages, Materials, and Chargeable Expenses, there are many elements of cost which, although they cannot be definitely assigned to any particular job or even series of jobs, are a necessary part of the expense of manufacture, and must be taken into account in calculating Costs.

Factory Rent, Depreciation of Plant and Machinery, Wages of Enginemen and Firemen, Fuel, Supervision, Wages of Storekeeper and Timekeeper, and General Labour, are a few of the expenses which occur within the confines of the Works.

Besides these, there are Office Expenses incidental to manufacture, such as salaries of clerks engaged on the Wages Book, Bought Ledger, and Cost Accounts, and a proportion of the Office Rent, Management, and General Expenses.

Indirect Charges are often dealt with under the one heading of Establishment Expenses, but it is more satisfactory to divide them into two :—

Works Expenses; and
Office Expenses.

The provision made in the Cost Accounts for Indirect Charges is conveniently described as "Oncost," subdivided into :—

Works Oncost; and
Office Oncost.

Representing, as it does, Indirect Charges, Oncost must of necessity be a matter of estimate. The estimate may be based upon past experience, in the case of an established business, or upon the experience of others modified by one's own plans, in the case of a new business. It is not practicable to wait till the close of a period before forming an estimate of the Oncost to be charged in that period, for Costs must be completed as the work is turned out.

The estimate should be based on the proportion of Indirect Charges to some Direct Charge. Thus, if the Productive Wages and Materials for a year have been £6,000, and Expenses £1,500, the rate of Oncost should be 25 per cent. on Prime Cost.

This is a rough-and-ready way of making the estimate, but is not accurate enough to be safe in practice. Prime Cost is made up principally of two definite elements, Direct Wages and Materials, and it will be found that the time and space occupied by any specified piece of work bear a nearer relation to the Direct Wages expended on it than to its Prime Cost as a whole. This will be seen to apply with special force to the case of two jobs, of which one is executed in a valuable, and the other in an inexpensive material, but which are in other respects alike.

Both will occupy the same time and space, and each should be charged with a similar share of Oncost. This would be accomplished if the rate were based on Direct Wages, but not if it were based on Prime Cost.

Another very good reason for making Oncost independent of materials, is that wide fluctuations are liable to occur in the market price of many commodities used in manufacture, whereas wages are relatively steady. When the rate of wages is varied, the alteration is more or less permanent, and the rate of Oncost can be adjusted.

A still more accurate method is to charge Oncost, not on the *amount* of wages, but on the *number of hours* expended on the work.

When it is desired to charge Oncost on the basis of time occupied rather than of the amount expended in wages, additional columns should be provided in the Wages Abstract (between those intended for "amount" and "Workman's No.") for the number of actual hours appearing in the Time Sheet. A similar arrangement is required in the Wages Column of the Cost Ledger. The total hours spent on the work are thus shown, and Oncost may be charged at so much per hour.

This method obviously increases the labour of compiling the Wages Abstract and posting to the Cost Ledger. Its claim to accuracy is based on the facts that cheap unskilled labour requires more supervision than well-paid skilled work, and occupies a greater amount of time and space in proportion to its monetary equivalent.

On the other hand it is usually the skilled workman who uses the most expensive and rapidly-wearing tools and machinery.

The simplest, and at the same time sufficiently accurate plan, is to charge Oncost on the amount of Direct Wages, and this is the method most generally adopted for Works Oncost.

Office Oncost may be charged in the same way, but it is probably better, in most cases, to base it upon Prime Cost, plus Works Oncost (*i.e.*, on Works Cost).

In charging Office Oncost as a percentage on Works Cost the idea is that office expenses incidental to manufacture should be distributed equably over the whole cost incurred outside the office. It will be seen that, since Works Oncost is based on wages and forms part of Works Cost, this method is equivalent to charging a higher rate on wages than materials. Let us take an example:—

Materials	..	..	..	..	..	..	£110
Wages	..	..	..	..	..	..	220
Prime Cost	..	..	..	..	..	..	330
Works Oncost—50 per cent. on Wages	..	..				..	110
Works Cost	..	..	..	..	..	..	440
Office Oncost—10 per cent. on Works Cost						..	44
Gross Cost	..	..	..	..	..	..	<u>484</u>

Here we have charged 10 per cent. on materials, and 10 per cent. on wages, *plus* Works Oncost, which latter is the same as 15 per cent. on wages alone.

The same amount of Office Oncost would have been charged by using a higher percentage based on Prime Cost, and this is by some considered the sounder method. In the above example 13½ per cent. on Prime Cost £330, would give £44 for Office Oncost.

At intervals a Trading Account should be prepared from the general books, and will afford a means of checking the rates of Oncost. This is done by comparing the totals of Oncost charged with the totals of the expenses intended to be covered. The subject is fully dealt with in the next chapter.

Some manufacturers use the same rate of Oncost year after year, without attempting to check its accuracy or revise it. Percentages become stereotyped in their minds, and, if generally approved in the trade, are looked upon as infallible. It frequently happens that a manufacturer has no means of checking his Oncost rates, for the Trading Account is often so loosely drawn as to afford little or no guidance. For example, we may find that Wages are set out at £6,000 and Expenses show an aggregate of £4,500. If the manufacturer is charging 75 per cent. on Direct Wages, he will find apparent confirmation of this rate in his Trading Account. It may, however, be found on examination that £1,000 of wages are indirect or unproductive (*i.e.*, not charged direct to jobs). The Direct Wages are therefore only £5,000, and the Expenses (including Indirect Wages) are £5,500, so that the rate for Oncost should be 110 per cent.

It is essential to bear in mind that Oncost is an *estimated provision* for Indirect Expenses, and needs

constant checking and revision. It is not unlikely that Oncost and Indirect Expenses may come to be regarded as synonymous, and that the percentage charged to a job for Oncost may be thought to be of necessity its actual proportion of Indirect Expenses. The fact is, of course, that the Indirect Expenses themselves are the reality, and that Oncost is an attempt to represent them in the Cost Accounts. On the success of that attempt depends the accuracy of the costing, and no further argument need be advanced in favour of constant watchful attention to this important element of cost.

CHAPTER IX.

HOW TO CHARGE ONCOST.

ALTHOUGH the expenses which are to be covered by charging Oncost are going on continuously, it would be highly inconvenient to charge each job with Oncost every week. It is much simpler to do so when the job is complete.

Let us assume, then, that a job has been completed, and its account in the Cost Ledger fully posted up.

The columns on the debit side should be added up. Works Oncost, at the rate decided upon, should be calculated upon the wages and debited to the Job Account *through the Cost Journal*. The corresponding credit should be posted to Works Oncost Account, which should be opened in the Cost Ledger.

The entry of Works Oncost in the Job Account should be posted in the Wages column under the total. A fresh total of Wages, plus Works Oncost, should be made, and the totals of the Materials and Chargeable Expenses columns should be carried in under it, and a fresh total made. This represents Works Cost.

To the total so obtained, Office Oncost should be added by means of a *posting from the Cost Journal*. (The corresponding credit will be to Office Oncost Account.) A

total should again be made, and this will represent the Gross Cost of the job as finally ascertained. This completes the debit side of the Job Account.

The following is an example:—

Job No. 1023.

Contract for J. ADAMS & Co.

		Materials			Ch'g'ble Exps.			Wages		
			£	s	d		£	s	d	
March .	27	To Sundries	13	21	2 3	42	1	9	0	13 15 7 3
April ..	3	" "	14	4	2 3					14 29 7 1
"	10	" "	15	2	11 0					15 30 7 2
"	17	" "	16	4	1 0					16 15 7 4
"	24	" "	17	1	11 9	45	3	10	0	17 10 3 0
May ..	1	" "								18 2 3 0
		Prime Cost		33	8 3		4	19	0	102 14 10
		Works Oncost, 50% .. J 19								51 7 5
										154 2 3
		Materials								33 8 3
		Chargeable Expenses								4 19 0
		Works Cost								192 9 6
		Office Oncost, 10% .. J 19								19 4 11
		Gross Cost								211 14 5

The Oncost charged in this way *will only apply to completed jobs*. If there is work in progress at the date of making out a Trading Account, the corresponding Job Accounts will not be debited with Oncost. As Work in Progress is often a large item and liable to wide fluctuations from year to year, some provision for charging Oncost on Work in Progress must be devised.

This is done by making a list of the totals of *all the accounts of jobs which are in progress*, keeping the totals of the Materials, Chargeable Expenses, and Wages columns separate.

Assume that the totals of the list of jobs in progress are as follows:—

						£	s	d
Materials	..	..	..	..	..	500	0	0
Chargeable Expenses	..	..	..	..	..	50	0	0
Wages	..	..	..	..	..	650	0	0
Prime Cost of Work in Progress	..	..	..	..	..	<u>£1,200</u>	<u>0</u>	<u>0</u>

It is at once apparent that wages to the amount of £650 have been paid, on which no Works Oncost has been charged. This should be remedied by debiting the amount of such Oncost to a Suspense Account, and crediting it to Works Oncost Account.

Thus, if the rate of Works Oncost is 50 per cent., the entry in the Cost Journal would be:—

Works Oncost Suspense Account	Dr.	£325	0	0	
To Works Oncost	..	..	..	£325	0 0

The effect of this is to ensure that Works Oncost Account is credited with Oncost on all the wages paid, and the account is then a proper basis for comparison with the expenses which Works Oncost is designed to cover.

The above entry leaves the Job Accounts untouched. When the jobs are completed, their accounts will be debited with Oncost in the usual way, and this will be credited to Oncost Account. That account has, however, already been credited with Oncost on the wages paid

during the preceding period. The consequent over-credit is corrected by reversing the entry made at the end of the preceding period, thus:—

Works Oncost	Dr.	£325	0	0	
To Works Oncost Suspense Account					..	£325	0	0

This clears the Suspense Account, and reduces the Oncost Account to its proper amount by debiting the amount which has been credited twice over.

Office Oncost should be dealt with in a similar way, but it should be calculated, not on Wages alone, but on Works Cost. Taking the figures given above, Prime Cost, £1,200 + Works Oncost, £325 = Works Cost, £1,525. If the rate for Office Oncost is 12 per cent., the entry will be:—

Office Oncost Suspense Account	Dr.	£183	0	0
To Office Oncost	.. ..	..	..	£183 0 0

This will provide the Office Oncost on work in progress at the end of a financial period; at the beginning of the next period the entry should be reversed, just as in the case of Works Oncost.

Instead of using Suspense Accounts, the Oncost on Work in Progress may be brought down as a debit balance on the Oncost Accounts in the same way as accrued expenses are often treated in the General Books.

Oncost itself appears only in the Cost Accounts. The corresponding feature in the General Accounts is found in

the expenses which Oncost is designed to cover, and it has already been explained that a comparison should be made whenever a Trading Account is prepared.

The comparison will be facilitated, and greater exactness will be obtained, if accounts are opened in the General Ledger under such headings that they may readily be grouped into totals, showing—

Works Expenses; and
Office Expenses.

When works and office are under the same roof, an apportionment of rent, rates, &c., as between the two, should be made.

CHAPTER X.

CREDITS TO JOB ACCOUNTS.

So far we have dealt only with the debit side of the Job Accounts in the Cost Ledger, showing the cost of each job.

We have now to deal with the credit side.

COMPLETED CONTRACTS.

When goods are made to order they will in most cases be delivered as soon as ready, and the Job Account should be credited with the contract price. The entry will be made through the Cost Journal, and the corresponding debit will be to Completed Contracts Account in the Cost Ledger. This account is kept for the purpose of maintaining agreement with the corresponding account in the general books.

If the Contract Price is greater than the Gross Cost, the job or contract shows a Profit ; if less, a Loss.

The profit or loss should be transferred from the Job Account to an account in the Cost Ledger entitled "Profits and Losses on Contracts." The transfer is made through the Cost Journal, and closes the Job Account, which can be ruled off.

TRANSFERS.

A Job Account may represent an article which is intended to form part of another. When finished, the article will be transferred to, or assembled with, that of which it is to form part. This transfer is represented in the Cost Ledger by a transfer from one Job Account to another. The transfer should be made through the Cost Journal, and may with advantage be made *before any Oncost has been charged*. Then the entry will take the following form:—

Sundries—	Dr.	
To Job No. 1,003	£50	0 0
Job No. 1,010—Materials	£25	0 0
„ „ „ Chargeable Expenses ..	1	0 0
„ „ „ Wages	24	0 0

In this way the Job Account of the transferred article is closed, and the main Job Account is debited with the proper amount in the three columns provided for the three kinds of Direct Charges.

Oncost will be debited to the main Job Account when the job is complete.

FINISHED STOCK.

A third way in which Job Accounts may be closed occurs when the article is transferred into Finished Stock. Since in many factories goods are made not only to order, but for stock, this case will be of frequent occurrence.

In the Cost Ledger the transfer is effected by means of an entry in the Cost Journal crediting the Job

Account and debiting Finished Stock Account. The transfer should be made after Works Oncost and Office Oncost have been debited to the Job Account.

The cost of the finished article is shown by the Job Account, and serves as a guide in fixing its sale price.

When the manufactured article is transferred from its place of manufacture into Finished Stock, the Cost Clerk should be informed of the fact by the Foreman under whose direction the work has been executed. Unless this is done, the Cost Clerk has no means of knowing that the transfer has taken place. To ensure the observance of this precaution, a Finished Stock Transfer (Form 9) should be used, and the Stockkeeper should be instructed not to receive any articles unless they are accompanied by a Transfer. The Transfer should be handed by the Stockkeeper to the Cost Clerk.

The Finished Stock Account requires careful handling, and will be described in Chapter XII.

CHAPTER XI.

COMPLETED CONTRACTS AND SALES IN THE GENERAL
ACCOUNTS.

WE have now to consider the entries in the general books relating to the disposal of manufactured articles.

COMPLETED CONTRACTS.

Since we had in the Cost Ledger an account for completed contracts, it is desirable to have a similar account in the General Ledger, so that the correspondence between the two systems of accounts may be maintained. To this account will be credited the price of completed contracts as they are charged up to customers.

SALES FROM STOCK.

Besides completed contracts there will be many sales which are not in respect of contracts, but are made from stock. These will be debited to customers and should be credited to an account entitled "Sales from Stock."

How the corresponding entry is made in the Cost Ledger is explained in the next chapter.

The necessary separation of "Completed Contracts" from "Sales from Stock" can be effected by having a

separate Day Book for each, or by passing Sales from Stock through the Day Book, and Completed Contracts through the Journal. A third way is to have extra columns in the Day Book, which will effect the separation by analysis.

TRANSFERS.

Transfers from one Job Account to another are not transactions which come within the scope of the general books, and no entry is required in respect of them. It is apparent that a transfer in the Cost Ledgers from one *real account* to another *of the same class* does not affect the correspondence between the two sets of books.

CHAPTER XII.

FINISHED STOCK IN THE COST ACCOUNTS.

IN Chapter X. we got as far as debit entries in this account, representing transfers of goods into Finished Stock. The goods will not stay there, but will be taken out, either (1) for use as Materials, or (2) for Sale.

FINISHED STOCK USED AS MATERIALS.

When finished stock is used as materials it must be debited to the account of the job on which it is used, just as necessarily as materials taken from stores. The entry will be made through the Cost Journal, and will result in a debit to the Job Account in the Materials column, and a credit to Finished Stock Account.

The source from which the entry is derived will be a Finished Stock Requisition (Form 10), which should differ in colour from the Stores Requisition and Credit Slip previously described. Each Finished Stock Requisition may be made the subject of a Cost Journal entry or the Finished Stock Requisitions may be summarised in an "Abstract of Finished Stock Requisitions," similar in form to the Material Abstract. The course to be followed is entirely a matter of convenience.

It is important that finished stock should be kept physically distinct and separate from stores. Unless this is done, the attempt to keep them separate in the Cost Accounts is likely—almost certain—to prove abortive.

SALES OF FINISHED STOCK.

The entries so far dealt with relate to the transfer of items into Finished Stock from Job Accounts and their subsequent re-transfer to Job Accounts for use as Materials. These entries are on opposite sides of the account, and the difference between their totals *represents the cost of finished stock which is on hand or has been sold.*

When stock is verified by stocktaking, its value at cost should be credited to the account, and the reduced debit balance then shows the *cost of finished stock which has been sold.*

It is unnecessary to enter in the Cost Accounts *details* of sales from stock. If against the cost we set the *total* of such sales the difference represents profit or loss.

The profit or loss should be transferred to an account entitled "Profit (or Loss) on Sales from Stock."

The value of the stock on hand can then be brought down as a balance on the Finished Stock Account, which can be ruled off.

BALANCING THE FINISHED STOCK ACCOUNT.

The following example will illustrate the process of balancing just described :—

<i>Dr.</i>		FINISHED STOCK.		<i>Cr.</i>	
		£ s d			£ s d
1904 Dec. 24	Totals brought forward ..	1,600 0 0	1904 Dec. 24	Totals brought forward ..	600 0 0
	To Sundries (transfers from Job Accounts) ..	100 0 0	31	By Sundries (transfers to Job Accounts) ..	60 0 0
"	" Ditto ..	200 0 0	"	" Ditto ..	40 0 0
			"	" Stock at date carried down ..	400 0 0
			"	" Balance, being Cost of Finished Stock sold ..	800 0 0
		£ 1,900 0 0			£ 1,900 0 0
1904 Dec. 31	To Balance, being Cost of Finished Stock sold ..	800 0 0	1904 Dec. 31	By Sales from Stock ..	1,000 0 0
"	" Profit on Sales from Stock ..	200 0 0			
		£ 1,000 0 0			£ 1,000 0 0
1905 Jan. 1	To Stock at date brought down ..	400 0 0			

CHECK ON STOCK.

The above method affords only an imperfect check on the stock itself, as all articles are debited to the account at cost, and some are credited at cost and others at sale price.

A better check is furnished by making the Stockkeeper keep a Goods In Book and a Goods Out Book similar to those kept by the Storekeeper (Chapter XVI.). In these all entries should be made *at cost price*, and the difference between their totals should agree with the variation of stock.

Still better is the Stock Ledger explained in Chapter XXI.

CHAPTER XIII.

THE RELATIONSHIP BETWEEN THE COST ACCOUNTS AND
THE GENERAL ACCOUNTS FURTHER CONSIDERED.

IN Chapter VII. it was shown that the Cost Accounts were in accord with the General Accounts as regards Direct Charges, except in so far as a discrepancy on the Stores Account might produce variation between the two.

We have now dealt with Indirect Charges, represented in the Cost Accounts by Oncost, and with the disposal of the products of the Factory either by sale or by transfer into Finished Stock, and it remains to be shown that the two systems are still in accord.

As regards Oncost, we have in the Cost Ledger a Works Oncost Account and an Office Oncost Account, and if these agree with the accounts in the General Ledger of the expenses they are designed to cover, we have complete accord. In practice exact agreement is not likely to be attained, but the difference can be ascertained and *the amount of error under the head of Oncost is thus known*, and steps can be taken to reduce the error in the next period.

As regards Sales and Completed Contracts, we have in the Cost Ledger two accounts which agree exactly with the corresponding accounts in the General Ledger, so that there is no room for discrepancies under this head.

As regards disposal of the products of the Factory by transfer into Finished Stock, this is an internal transaction which does not concern the General or Financial Books. As the transfer in the Cost Ledger is merely from one real account (the Job) to another (Finished Stock) involving no profit or loss, no discrepancy between the two sets of accounts can be caused thereby.

By means of the Cost Accounts we have, however, divided up the sales in such a way that we are enabled to show :—

The Profit or Loss on each Contract.

The Profit or Loss on Sales from Stock.

These include all the manufacturing profits, and the results must agree with those shown by the General Accounts, except so far as Stores may not have been accounted for, or Oncost may have been incorrectly estimated.

The system here outlined is as simple as is compatible with a due regard to the importance of knowing whether the results shown by the Cost Accounts are accurate, and, if not, *wherein and to what extent they are inaccurate.*

The annexed diagram is designed to show the relationship between the Cost Accounts and General Accounts in graphic form, and to illustrate at one view the principles which have been set forth up to this point. It is easier to understand a graphic representation of a system, as a whole, than to picture such a system mentally with no other aid than that of the explanatory text.

Since the correspondence between the Cost Accounts and General Accounts depends upon the agreement of the pairs of Nominal Accounts, the Cost Clerk should compare his books with the corresponding accounts in the General Ledger at short intervals, and should at once take steps to rectify any discrepancy that may have crept in.

To ensure that the Cost Accounts and General Accounts should bear a definite relation to each other as explained above, considerable bookkeeping skill is required. Those who have not the necessary skill will find that the methods of costing alone set forth in these pages are simple and workable. They do not in any way *depend* upon their relation to the General Accounts. That relation supplies an invaluable check upon and control over the Cost Accounts, but does not affect the Job Accounts individually. The latter may be kept on single-entry principles in accordance with the usual practice of cost accountants. The Job Accounts would then be debited with the Elements of Cost, and credited with the Contract or Sale Price. There would be no Nominal Accounts, and consequently nothing from which a Manufacturing Account could be raised in the Cost Ledger. The costs might be arrived at with considerable accuracy, but the system would possess the defect common to most costing systems, in that it would not furnish totals by means of which its accuracy could be tested.

From Cost Books kept on single-entry principles, Nominal Accounts may be raised by the process of

abstracting every account, which is often applied by accountants to commercial books which are kept on an imperfect system. The tedium of this process is well known, and it is not used when the desired totals can be obtained in any other way. A system which gives the requisite figures week by week must be superior to one which necessitates the overhauling of every account in the books each time the totals of the transactions are required. It is not necessary to dwell on the superiority of double-entry over single-entry, and there is no good reason why Cost Accounts should be made to suffer by excluding a principle which is applied to every well-kept set of commercial books.

CHAPTER XIV.

CLOSING THE COST LEDGER.

IN order to explain how the balances in the Cost Ledger are dealt with at the end of the period covered by a Trading Account, it will be best to take an example. Round numbers in comparatively small amounts will be dealt with as being easier to follow.

It is not, of course, practicable to show in detail the entries for a period, and we will therefore take the totals of the entries of each class that has been referred to in the text.

The Job Accounts, instead of being shown individually, will be separated into Completed Jobs and Jobs in Progress, because the two classes are not treated in the same way with regard to Oncost. Under each class the jobs will be treated collectively (*i.e.* only one account will be shown for all the completed jobs, and another for jobs in progress, and each account will be typical of the individual accounts of which it is assumed to be composed).

Let us, then, assume that the following is a summary of the transactions at a Factory for a year:—

Productive Wages, on Completed Jobs	£	800	£
" " " Jobs in Progress	200		
	<hr/>		1,000
Direct Goods, on Completed Jobs	200		
" " " Jobs in Progress	50		
	<hr/>		250
Stores used, on Completed Jobs	1,400		
" " " Jobs in Progress	600		
	<hr/>		2,000
Transfers from Finished Stock to Completed Jobs ..			150
Chargeable Expenses on Completed Jobs	100		
" " " Jobs in Progress	20		
	<hr/>		120
Total Direct Charges or Prime Cost			<u>£3,520</u>
Works Oncost on Completed Jobs	600		
" " " Jobs in Progress.. ..	150		
	<hr/>		750
Office Oncost on Completed Jobs	325		
" " " Jobs in Progress.. ..	102		
	<hr/>		427
Total Indirect Charges or Oncost			<u>£1,177</u>
Transfers from Completed Jobs to Finished Stock			£
Contract Price of Completed Contracts			950
Sales from Stock.. ..			2,800
Finished Stock on hand at the end of the year			700
			<hr/>
			300

From these figures we can raise a series of Journal entries and post them to the Cost Ledger (*see* Appendix at the end of the volume).

1 Completed Jobs	Dr.	£	3,575	£
To Sundries—				
Productive Wages				800
Direct Goods				200
Stores				1,400
Chargeable Expenses.. ..				100
Finished Stock				150
Works Oncost				600
Office Oncost				328

2	Jobs in Progress	..	..	..	<i>Dr.</i>	£ 870	£
	To Sundries—						
	Productive Wages	..	..	..	..	..	200
	Direct Goods	..	..	..	..	..	50
	Stores	..	..	..	..	..	600
	Chargeable Expenses..	..	..	..	..	..	20
<hr/>							
3	Works Oncost Suspense Account	..		..	<i>Dr.</i>	150	
	To Works Oncost	..	..	..	..	..	150
<hr/>							
4	Office Oncost, Suspense Account	..		..	<i>Dr.</i>	102	
	To Office Oncost Suspense Account	..		..	..	..	102
<hr/>							
5	Finished Stock	..	..	..	<i>Dr.</i>	950	
	To Completed Jobs	..	..	..	..	..	950
<hr/>							
6	Completed Contracts	..	..	..	<i>Dr.</i>	3,400	
	To Completed Jobs	..	..	..	..	..	3,400
<hr/>							
7	Sales from Stock	..	..	..	<i>Dr.</i>	700	
	To Finished Stock	..	..	..	..	..	700
<hr/>							

In the Appendix the posting of these entries to the Cost Ledger is shown and should be carefully followed by the reader.

Stock will be seen to have been brought down as a balance on Finished Stock Account.

The profit on completed jobs and finished stock can now be ascertained and transferred so as to clear those accounts.

8	Completed Jobs	..	..	..	<i>Dr.</i>	£ 775	£
	To Profits and Losses on Contracts	..		..	..	..	775

9 Finished Stock	..	..	..	Dr.	£ 200	£
To Profit on Sales from Stock	..	..	..	..	..	200

All this is in accordance with methods previously outlined, and we come now to the question of closing the Cost Ledger.

The first step is to prepare a Trial Balance as follows:—

TRIAL BALANCE OF THE COST LEDGER.

Jobs in Progress—					£	£
Wages .. .. .	..	..	..	£ 200		
Materials .. .. .	..	..	..	650		
Chargeable Expenses .. .. .	..	..	..	20		
					870	
Works Oncost Suspense Account (on Jobs in Progress)					150	
Office Oncost Suspense Account (on Jobs in Progress)					102	
Finished Stock on hand .. .. .	..	..	..	..	300	
Productive Wages .. .. .	..	..	..	..		1,000
Direct Goods .. .. .	..	..	..	..	..	250
Stores .. .. .	..	..	..	..	..	2,000
Chargeable Expenses .. .. .	..	..	..	..	..	120
Works Oncost .. .. .	..	..	..	..	..	750
Office Oncost .. .. .	..	..	..	..	..	427
Sales from Stock .. .. .	..	..	..	..	700	
Profit on Sales from Stock .. .. .	..	..	..	..	..	200
Completed Contracts .. .. .	..	..	..	..	3,400	
Profits on Contracts .. .. .	..	..	..	..	..	775
					<u>£5,522</u>	<u>£5,522</u>

The first three balances, taken together, represent the gross cost of jobs still in hand (Work in Progress). The fourth is the gross cost of finished stock on hand. All four represent assets, and are Real Accounts.

The remainder are the balances of Nominal Accounts and correspond with those from which, in the general

books, a Trading Account would be prepared, but *are on the reverse sides of the Ledger.*

We have thus in the Cost Ledger all the elements of a Manufacturing Account, which should correspond with the Trading Account in the general books. Let us transfer all the Nominal Accounts to the Manufacturing Account as shown below in roman type.

The first four balances, representing Real Accounts, cannot be so transferred, or they would be extinguished and leave nothing in the Cost Ledger to represent the corresponding assets. Just as, in the Trading Account, Stock and Work in Progress are required before profit can be shown, so in the Manufacturing Account, which already shows profit, we must have Stock and Work in Progress represented. This is done *by bringing their value down as a balance* as shown in italics. The two sides of the Manufacturing Account will then agree, and it can be compared with the Trading Account (*see next chapter*)

MANUFACTURING ACCOUNT.

To Completed Contracts	..	£	3,400	By Wages	..	£	1,000
„ Sales from Stock	..		700	„ Direct Goods	..		250
				„ Stores	..		2,000
			4,100	„ Chargeable Expenses	..		120
				„ Works Oncost	..		750
To Balance	..		1,422	„ Office Oncost	..		427
							4,547
				By Profit on Contracts	..		775
				„ Ditto Sales from			
				Stock	..		200
			<u>£5,522</u>				<u>5,522</u>
				By Balance (Stock and Work			
				in Progress)	..		1,422

After closing the Cost Ledger the Trial Balance will be as follows :—

				£	£
Jobs in Progress (Prime Cost)	..	..	..	870	
Works Oncost Suspense Account	..	..		150	
Office Oncost Suspense Account	..	..		102	
Finished Stock	..	..	..	300	
Manufacturing Account	..	..	..		1,422
				<u>£1,422</u>	<u>£1,422</u>

and the Cost Ledger is ready for the next period's entries.

The next Manufacturing Account commences with a credit representing Stock and Work in Progress, corresponding with the opening debit of the next Trading Account in the general books.

It seems remarkable that in the Manufacturing Account the entries should be on the reverse sides of those occupied by the corresponding items in the Trading Account.

The reason is that, taking the Cost and General Accounts separately, we have double-entry in each, and taking them together, we have double-double-entry so far as both systems deal with the same transactions in different aspects.

It would be easy to credit Stores and Wages in the general accounts when debiting the Job Accounts, but this would have the effect of destroying the Trading Account in the general books, as explained at p. 28.

To avoid this, the credits to Stores and Wages Accounts are made in a separate and independent Cost Ledger, instead of by transfers in the General Ledger. All the nominal accounts in the Cost Ledger are raised on the same principle. They are fictitious accounts made up of entries which, if made in the General Ledger, would have cleared the corresponding accounts.

If, at the end of a financial period, we chose to merge the Trial Balances of the Cost Ledger and General Ledger, and to "cancel out" balances of like amount on opposite sides, we should find that the balances of the Accounts of Direct Wages, Direct Goods, Completed Contracts, and Sales from Stock would disappear. The Stores and Oncost Accounts in the Cost Ledger would also cancel out with the Stores Account and certain Expense Accounts in the General Ledger, except so far as Stores might have been imperfectly accounted for and Oncost incorrectly estimated. Ignoring differences due to this cause, we should find that the only nominal account balances left would be:—

- (a) In the Cost Ledger, Profit on Completed Contracts and Profit on Sales from Stock.
- (b) In the General Ledger, certain Expense Accounts not intended to be covered by Oncost.

The scanty account which could be prepared from these is all that would be left of the Trading Account, and we should be in much the same position as if the two systems had not been separated at first.

The duplication of the nominal accounts in the Cost Ledger and their appearance on reversed sides is thus seen to be due to the separation of the two systems, and the introduction of double-double-entry as a means of dealing with manufacturing operations twice over—*i.e.*, in totals in the General Accounts for the preparation of Trading Account, and in detail in the Cost Accounts, for the preparation of Job Accounts.

CHAPTER XV.

COMPARING THE COST ACCOUNTS AND GENERAL ACCOUNTS.

THE results shown by the Cost Accounts should be compared very carefully with those disclosed by the General Accounts.

In both systems the Direct Wages, Direct Goods, Chargeable Expenses, Completed Contracts and Sales from Stock, are identical in amount, so that there is no room for error on these accounts, but the consumption of stores, as shown by the two systems may not tally. To facilitate comparison, Stocks of Stores should be incorporated with the Stores Account in the General Ledger, in order to give a single debit from that account to Trading Account. This is clearer than showing Stocks on both sides.

To test the accuracy of the rates of Oncost, the Expense Accounts in the General Ledger should be grouped in the Trading Account under "Works Expenses" and "Office Expenses incidental to Manufacture," so that separate totals for each class may be shown. These are the totals which should be compared with the Oncost Accounts. As regards Office Expenses incidental to Manufacture, an arbitrary apportionment, as between those incidental to Production and Distribution severally, is usually necessary.

By means of such a classification and apportionment, a Trading Account may be prepared on the lines of the following example:—

TRADING ACCOUNT.

To Productive Wages	£ 1,000	By Completed Contracts	£ 3,400
▪ Direct Goods	250	▪ Sales from Stock	700
▪ Stores Purchased .. £2,500		▪ Finished Stock on hand ..	300
Less Stock on hand .. 480		▪ Work in Progress	1,122
	2,020		
▪ Chargeable Expenses	120		
	3,390		
To Balance	2,132		
	£5,522		£5,522
To Works Expenses:—		By Balance	2,132
Rent, Rates, &c. .. £180			
Supervision and Un-productive Wages.. 250			
Fuel 95			
Repairs 60			
Depreciation 100			
General Expenses .. 120	805		
▪ Office Expenses (proportion incidental to Manufacture):—			
Rent, Rates, &c. .. 50			
Clerks' Salaries .. 70			
General Manager's Salary .. 100			
General Expenses .. 150	370		
	1,175		
To Balance, being Manufacturing Profit	957		
	£2,132		£2,132

The corresponding profit shown by the Cost Accounts is £975, made up of Profit on Contracts, £775, and Profit on Sales from Stock, £200. This is £18 more than the Trading Account shows, and we have now to see where the difference comes in.

The preceding chapters will have shown where it is to be looked for, viz., in the Stores Account and Oncost, since, with these two exceptions, there is no room for disagreement.

The Trading Account shows that £2,020 worth of Stores have been disposed of, whereas the Cost Accounts have only dealt with £2,000 worth. The undercharge in the Cost Accounts is therefore	£ 20
Works Expenses amount to £805, against which Works Oncost has only been provided to the extent of £750, being an undercharge of ..	55
	<hr/> 75
Office Expenses amount to £370, against which Office Oncost has been provided to the extent of £427, being an overcharge of	57
	<hr/>
Net undercharge to Cost Accounts.. .. .	<u>£18</u>

It appears, then, that the rate for Works Oncost should have been $80\frac{1}{2}$ per cent., instead of 75 per cent.

If the correct rate had been charged, the total of Prime Cost, £3,520, and Works Oncost, £805, would have been £4,325. Office Oncost at $8\frac{1}{2}$ per cent. on this amount would have provided very nearly the £370 required to cover Office Expenses, whereas 10 per cent. has been charged.

As regards the deficiency on Stores Account, a small addition may be made to Works Oncost; but it is perhaps better not to recognise a deficiency as a necessary expense which has to be provided against. Attention

should, however, be directed to securing greater accuracy in keeping the books and documents relating to this account in the next period.

The foregoing example deals with the case of a new business in which there were no stocks of stores and finished goods, and no work in progress at the beginning of the period.

If there had been a stock of stores on hand at the beginning, the consumption of stores should be shown in the ~~Manufacturing~~^{Trading} Account, as follows:—

To Stock of Stores on hand, Jan. 1	..	£500
„ Stores Purchased	.. ..	3,000
		<u>3,500</u>
Less Stock of Stores on hand, Dec. 31..		600
		<u>£2,900</u>
Consumption of Stores	.. ..

Stock of Finished Goods and Work in Progress at the beginning should be the first items on the debit side of the Manufacturing Account, and would correspond exactly with the first credit on the ~~Manufacturing~~^{Trading} Account in the Cost Ledger, such first credit being the balance brought down from the previous period as shown on page 56.

It is necessary to mention that the Cost Accounts are designed to show the Cost of Production up to the time when goods are ready for delivery to a customer, or to be transferred into Finished Stock.

The difference between such cost and the sale price of the goods is *Manufacturing Profit*. Before *Net Profit* is

arrived at, Discounts on Sales, Interest, and all the expenses of distribution have to be charged. Among expenses of distribution are Travellers' Salaries, Commission and Expenses, Carriage Outwards, Advertising, and a considerable proportion of Establishment Charges. The Trading Account given on p. 61 deals only with items representing *Costs of Manufacture*, and Sales.

Some manufacturers prefer to fix Office Oncost at such a rate that it will cover, not only expenses incidental to manufacture, but also those incidental to sale and distribution. The difference between cost, thus ascertained, and sale price represents Net Profit. There is no objection to this course so long as it is clearly understood that *the cost so shown is not the cost of production*, and that for the purposes of stocktaking, a deduction must be made from Finished Stock and Work in Progress, to counter-balance the loading in respect of expenses which are not incidental to production.

PART 11.

CHAPTER XVI.

STORES ACCOUNTS.

THE question of accounting for materials is of great importance, but is not essential to the ascertainment of Prime Cost, and has, therefore been left over until now.

From the preceding chapters it will have been seen that some check on the Storekeeper is furnished by a comparison of the Stores Account in the General Ledger with the corresponding account in the General Ledger, since one deals with stores received, and the other with stores issued. The check is, however, of the roughest kind, and merely discloses that there is a discrepancy of a certain amount on the Stores Account. It gives no clue to the cause of the discrepancy, nor to the class of materials in which it has arisen.

This defect is in some degree remedied by the introduction of Storekeeper's books. These are the Stores-in Book in which he enters all materials received, and the Stores-out book, in which he enters all those he issues.

STORES-IN BOOK (FORM II.)

When receiving goods the Storekeeper should check them with the delivery note, and enter in his Stores-in Book the name of the supplier and particulars of the quantities actually received (which are not necessarily the same as those specified on the delivery note). The delivery note, if incorrect, should be corrected at the same time, and also the counterfoil which the Storekeeper signs and returns to the carman. It is not always practicable for the Storekeeper to enter up his Stores-in Book as he goes along, as he may be too busy taking in or issuing goods. He should, therefore, be provided with a file on which to place the delivery notes until he has time to enter them. It will be seen, that no goods should be received without a delivery note.

Having entered up quantities, the Storekeeper has next to enter prices, and this cannot be done until an invoice arrives. Some manufacturers, therefore, insist on a priced invoice with all goods bought, instead of a delivery note showing quantities only.

The Storekeeper will also have to enter in his Stores-in Book the credit slips which he receives with materials received from jobs. The prices as well as quantities should be entered.

In this way the Storekeeper is charged with the value of all goods he receives, and a detailed record is created in his own books.

The Stores-in Book should be checked by the counting-house with Invoices and Credit Slips.

STORES-OUT BOOK (FORM 12).

The Storekeeper credits himself with materials issued by means of the Stores-out Book. This is written up with quantities and prices from the Requisitions which are his authority for parting with materials. His entries should be checked by the counting-house. A detailed record is thus built up, and the Stores-in Book and Stores-out Book together constitute the Storekeeper's charge and discharge. They bear the same relationship to Materials as the *Dr.* and *Cr.* sides of the Cash Book bear to Cash.

Comparison of totals should show the fluctuation of stores, which should be confirmed by successive stock-takings. If there is a discrepancy, enquiry should be made. The Storekeeper's books give no *prima facie* indication where the discrepancy should be looked for, but it is now possible by means of the detailed records to pick out all the entries of any particular commodity or commodities on both sides, and by totalling them to ascertain whether the goods have been accounted for. This is a very troublesome and tedious task, and one not often undertaken. Storekeeper's books should be regarded as furnishing a moral, rather than a practical arithmetical check. They are, moreover, of use for reference to movements of stores, as they are chronological records.

The only complete check on stores, is furnished by the Stores Ledger.

STORES LEDGER (FORMS 13 & 13A.)

The object of this book is to secure that materials shall be accounted for, as representing money's worth, with some approach to the accuracy which is universally deemed necessary with regard to money itself.

An account should be opened for every class of materials. At the head of the account are written :—

The name of the Commodity.

The minimum Stock required.

The maximum Stock allowed.

Whenever these limits are passed, the Stores Ledger Clerk should report the fact to the counting-house in writing forthwith.

Each account has *Dr.* and *Cr.* sides. It is debited with Materials received, and credited with those issued. The balance of the account should therefore represent the stock on hand at any time. This can be tested by periodical stocktakings. The balance of stock on hand *thus verified* should be brought down *in red ink*. The difference, if any, should be written-off, if not cleared up, after enquiry. At the dates to which the general accounts are made up (*i.e.*, each time a Balance Sheet is prepared) the balances, *if not verified* by actual stocktaking, should be brought down *in black ink*.

The Stores Ledger is written-up on the *Dr.* side from Invoices and Credit Slips, and on the *Cr.* side from Requisitions. Entries should be checked by the counting-house. The Stores Ledger folio should be marked against every item on the Requisitions and Credit Slips.

The advantages of keeping Stores Accounts in this form are considerable :—

(1) A *detailed* check on the Stores is furnished which cannot be obtained in any other way. Any discrepancy on the Stores Account is *localised*, and therefore more readily discovered. Its recurrence is also more easily prevented.

(2) The work of those entrusted with the replenishment of stores is greatly facilitated, as the state of the stock of every class of materials is readily ascertained. This permits of the economical use of working capital.

(3) The risk of running out of a particular class of materials is reduced to a minimum, and the danger of delaying or stopping a contract, and so disorganising the works, is avoided.

(4) The task of stocktaking is much simplified, as stock of any class of materials can be taken as opportunity occurs, and without the paralysis of work which accompanies a general stocktaking. If these intermittent stocktakings prove the balances of the Stores Ledger consistently, the balances at the end of any financial period may be taken as correct. It is, however, necessary to prove every account in turn.

The extent to which classification of materials should be carried is a matter which must depend on the circumstances of each individual factory. As classification is elaborated, so the check on stock is improved, but so also is clerical labour increased. The point at which expense begins to outrun advantage cannot be stated in general terms.

In most cases it is unnecessary to deal with values in the Stores Ledger. If quantities are accurately accounted for, nothing is left to be desired. If there should be a surplus or deficit, its money value is easily computed. In the case of materials which, from their minuteness and variety, are difficult to deal with in quantities, money values may with advantage be used alone.

In large concerns it is an advantage to add supplemental columns at the left-hand side of each account, showing—

Probable requirements (stating Contract numbers).
Quantities ordered, with dates and names of
Suppliers and Order Numbers.

Quantities received are shown by the *Dr.* side of the accounts.

Some firms keep a Stores-in Book and Stores-out Book, as well as a Stores Ledger, and post from the two former to the last. This seems to be an unnecessary increase of clerical labour, which is sufficiently heavy whenever a Stores Ledger is kept.

STOREKEEPER'S ANALYTICAL BOOKS.

A compromise in the way of Stores Accounts may be effected by a classification of materials under a few general heads. The principal heads should be such as provide a broad general classification, and the materials which do not fall under any of these heads should be grouped together as "Sundry Stores."

To give effect to this classification the Stores-in Book and Stores-out Book should be provided with analytical money columns corresponding with the heads adopted. These analytical columns are additional to those given in Forms 11 and 12, and should be ruled on the right-hand page, while the left is occupied by the ordinary ruling. It will be found helpful to have every third horizontal or "feint" line ruled darker, to assist in keeping the eye on the right line in making the analysis.

A classification of materials in values, but not in quantities, is provided in this way, and it will be found possible to allocate an error in the Stores Account to the several classes of materials, provided the stocktaking is classified on the same lines.

The check on stores is much less complete than that afforded by the Stores Ledger, but the clerical labour is reduced.

The method outlined above does not interfere with postings to the Job Accounts from the Storekeeper's books when it is desired to follow that course.

CHAPTER XVII.

FURTHER CONSIDERATION OF MATERIALS.

THE method of debiting jobs with materials, which was described in Chapter IV., gives the cost, but does not show any particulars of the materials used. The Material Abstract is a short cut to the ascertainment of cost, and if further information is required, more work becomes necessary.

If the Material Abstract is retained as part of the costing system, it will be advisable to have Requisitions and Credit Slips filed away *under the numbers of the jobs to which they relate.** They are then immediately available if particulars of the materials used on any particular job are required. It is a question for each manufacturer to decide for himself, whether every Job Account is to contain, on the face of it, full particulars of the materials used, or whether it will suffice if such particulars are available when required.

If he elects for full particulars in the Job Account, the Material Abstract becomes unnecessary, and the Job Account will be posted up either from the Requisitions and Credit Slips themselves, or from the Stores-in Book and Stores-out Book. The increase of clerical labour will be very considerable.

* NOTE.—The numerical order of the Requisitions and Credit Slips themselves is preserved in the duplicates remaining in the books kept by the Foremen.

In the former case, to secure the proper entries in the Stores Account kept in the Cost Ledger, it will be necessary to make a list in a book to be kept for the purpose,

(a) of the Requisitions posted to Jobs;

(b) of the Credit Slips posted to Jobs.

The total of the former should be credited, and of the latter debited, to Stores Account.

Or, if the Stores Books are the posting medium, the total of the Stores-out Book should be credited to Stores Account. Care should be taken to exclude from the total any stores, such as Oil, Waste, &c., which have not gone into jobs (see p. 78), unless these have been posted into the Cost Ledger. The *total of Credit Slip entries* in the Stores-in Book should be debited to Stores Account. This will be facilitated by the introduction of an extra money column for Credit Slip entries in the Stores-in Book.

It is convenient to duplicate the Stores-in Book and Stores-out Book so that the two sets may be used "day about," and one may be in use at the store while the other is being checked and posted in the counting house. In large concerns it becomes a matter of multiplying rather than of mere duplicating.

When materials are posted in detail, it is necessary to have an extra column in the Cost Ledger on the credit side for Credit Slip entries, as these would be too numerous to be dealt with by red ink entries on the debit side without risk of confusion. The total of the Credit

Materials column should be deducted from the total of the Debit Materials column before the latter is carried out, to show the gross cost of the job.

It is useful in some trades to have, in the Cost Ledger, supplemental columns showing the weights of materials used on jobs. These should be on the left-hand side of the narrative column in order to come alongside the description of materials.

COST PRICE AND MARKET PRICE.

Some difference of opinion exists on the question whether materials should be charged out to jobs at cost or at market price.

If they are charged at cost, the Job Account will be debited with the value of the materials at the time they were bought, which may be very different from their value at the time they are used. At the latter time it may be possible to purchase the necessary materials more cheaply, or they may have risen in price. In either case the job will not be charged with their value at the time they are used, if cost price is adhered to. Since a manufacturer is in competition with others who have access to the market, it would appear to be more practical to make use of the market price, charging the job with the amount for which the materials could then be purchased.

Whichever plan is adopted, difficulties are bound to arise when serious fluctuations in prices occur. If cost price is adhered to, it will require modification every time a fresh purchase is made at a different price. The

modification should be based, not on the average price of purchases which have been made, but on the average price of quantities then in stock. To illustrate this, let us take a hypothetical case. On January 1st, 50 tons of copper were bought at 6d. per lb., and by March 31st, 40 tons had been used. At the latter date 50 tons more are bought at 8d per lb. The average cost price of the total purchases is 7d per lb., but this is not the price to adopt, *since most of the cheap copper has been used*. The average cost price of what remains is the average of 10 tons at 6d. per lb., and 50 tons at 8d. = 7½d. Unless a Stores Ledger is kept showing quantities on hand at any time, the average cost price cannot be fixed without a stocktaking.

If market price is adopted, small variations may be ignored, but a scale of prices should be drawn up, and whenever the market price passes any of the degrees of the scale, the price at which materials are charged to jobs should be revised. The effect of this course is to cause a discrepancy on the Stores Account as a whole, representing profit or loss due to the fluctuation.

For stocktaking purposes the price should be the average cost price of the remaining stock or the then market price, *whichever is the lower*. To arrive at the average cost price, it may be assumed that what remains represents the most recent purchases.

Whether cost price or market price is used for charging out materials to jobs, it should be remembered that those charged to work in progress and finished stock may have been charged at a price which differs from the market price at the date of a Balance Sheet. In the case

of a falling market some provision for the consequent depreciation in value of these assets may prudently be made in the general accounts. In the case of a rising market, however, they should not be written up. This is in accordance with the sound accountancy maxim that all losses which can be foreseen should be provided for, but unrealised profits should not be anticipated.

To sum up, the advocates of cost price claim that by means of it they show the actual cost of manufacture and not what might have been the cost, and that it does not interfere with the balancing of the Stores Account in money value. Those who uphold market price claim that it furnishes a sounder basis for estimating and for competitive purposes by dealing with actual values rather than with former values, and that it rightly causes the effect of fluctuations to be seen in the Stores Account rather than in the Job Account, so that profits or losses due to chance or speculation are distinguished, as they should be, from ordinary trading results.

The author supports the latter view.

STORES NOT CHARGEABLE TO JOBS.

Certain stores—such as lubricants and cleaning materials, for example—do not enter directly into the composition of manufactured articles, and cannot be charged to jobs like other stores.

They should be requisitioned out in the same way as materials for jobs, but as they are for general use and not for jobs they may be omitted from the Material Abstract. They should, however, be dealt with in the general accounts. This is done by making a list of the numbers

and amounts of the Requisitions. The total of the list forms the subject of a Journal entry (General Journal) thus:—

Engine Sundries—	Dr.	£	s	d
To Stores .. .. .	..		
Oil and Waste for the Week .. ..	..		

This should be posted to the General Ledger.

An alternative and better method is to open an account for stores so used in the Cost Ledger. In this case they should be included in the Material Abstract, and posted to their account in the Cost Ledger. At the end of the financial period the total of this account should be passed through the General Journal thus:—

Engine Sundries—	Dr.	£	s	d
To Stores .. .. .	..		

and should be posted to the General Ledger. At the same time, an entry of the same amount should be passed through the Cost Journal, but in the reverse direction:—

Stores—	Dr.	£	s	d
To Engine Sundries .. .. .	..		

This should be posted to the Cost Ledger, and will keep the Stores Account straight.

The effect of the second method in the Cost Accounts is to credit these items to Stores Account in detail weekly, and debit them back again in total at the end of the financial period. They do not directly concern the Cost Accounts, but a good reason for treating them in this way is that it ensures that all Requisitions are treated alike.

CHAPTER XVIII.

FURTHER CONSIDERATION OF ONCOST.

DIFFERENTIAL RATES.

SINCE Oncost is of necessity a matter of estimate, it may be charged with a nearer approach to accuracy if the expenses relating to certain classes of work are separately classified, and a differential rate of Oncost fixed in respect of each.

In large engineering works, for instance, it is found that Oncost charged on Direct Wages *as a whole* is not sufficiently accurate, having regard to the fact that heavier expenses in respect of supervision, power, use of machinery, and general upkeep are incurred in some shops than in others. Since the proportion of wages expended in the various shops is not the same for all jobs, omission to provide differential rates of Oncost might result in serious error. Hence it is usual to charge *on each class of shop wages* a separate rate of Oncost, based upon the expense of running the shop.

This naturally involves some little elaboration, but the matter is too important to be put aside for that reason. In the Cost Ledger separate columns should be provided in the Job Accounts for the Direct Wages of each shop, and separate Oncost Accounts should be opened. The Wages Abstract has also to be compiled in sections in order to keep the various classes of wages separate.

Each section of the wages should then be worked on exactly the same lines as the original Works Oncost Account, including the Suspense Account (p. 37) at stocktaking dates.

It will be well to provide an extra column in the Job Accounts in the Cost Ledger headed "Total Wages," otherwise it will not be practicable to show on the face of the account the totals of Direct Wages expended and of Oncost charged in respect of the job.

In the General Accounts a somewhat elaborate sub-division of expenses is required to correspond with the sub-division of Oncost. Among the expenses is the important item of Depreciation of Plant. To effect the necessary allocation of this, a separate value should be placed upon the plant in each shop, and depreciation should be charged at rates based upon the estimated wear and tear in each case. The rate should also include some provision for obsolescence, which, however, is a most difficult thing to estimate.

To secure still greater accuracy, the cost of upkeep of Loose Tools in each shop should be shown separately. (See p. 93.)

MACHINE ONCOST.

In some factories, Oncost takes the special form of a charge for the use of individual machine tools, proportionate to the time during which each is used on the job. The method is, of course, only applicable to large and expensive machines.

The rate is arrived at by forming an estimate of the number of working hours in the life of the machine. The original cost of the machine, plus the estimated cost of running and maintaining it, when apportioned over its life will furnish an hourly rate. This, multiplied by the number of hours for which the machine is used on a job, gives the debit to that job for Machine Oncost.

This method is useful as furnishing a basis for comparing the cost of using a machine with that of another for which it has been substituted, or with that of hand-labour, and is often applicable to manufacture by machine-process.

A register of the number of hours during which a machine is used will furnish a means of calculating the total amount debited to jobs in respect of it, and this may be regarded as representing the earnings of the machine.

The method here indicated is one which appeals to engineers rather than accountants. It is usually considered that differential rates of Oncost for shops in which different classes of machinery are used are sufficiently accurate.

To give due effect to the principle of Machine Oncost, considerable elaboration is required when the machines are numerous. The method is not of much value unless the actual expenses of installing, maintaining, and running each machine are ascertained in the General Accounts, and can be compared with the total amount charged to jobs for its use in successive periods in the Cost



Accounts. Fixing an hourly rate for a machine is not the same thing as knowing that the machine costs just that amount per hour, and an incorrect rate is not helpful.

FOUNDRY ONCOST.

In Foundry Accounts it is simplest, and often sufficiently accurate, to estimate the cost of Castings wholly by means of Oncost *on weight*. The proportion of charges which can be treated as direct is comparatively small. The rate is arrived at by dividing the total foundry expenses for a period by the number of cwt. of castings produced. It has, however, to be borne in mind that there are often several classes of castings, the cost of which differs *inter se*. The weights of each class should be separately recorded, and it will not be difficult for an experienced manager to fix the proportionate cost of the several classes, when he knows the cost of the whole and the total weight of each class.

In engineering works to which a foundry is attached, the latter should be treated as a separate concern, so that Foundry Wages and Oncost do not get mixed up with Shop Wages and Oncost in the Job Accounts. The castings should be passed from the foundry into stores at a fixed price, and should be requisitioned out as required, and charged in the Cost Accounts as Materials *ex Stores*.

A comparison of the foundry price for castings with the market price will show whether the department is working at a profit. An alternative plan is for the

foundry to invoice the castings to the shops, or to customers at market price, and show the profit on its own books. This is, however, to create bookkeeping work without obtaining any corresponding advantage, unless the factory manager is stimulated by an appeal to his commercial instincts.

MANUFACTURE BY PROCESS.

In some manufactures the processes undergone by the raw material are so numerous and varied that the cost of them is very difficult to allocate. This is especially the case when a number of heterogeneous articles belonging to different job numbers are submitted to a process in bulk at the same time.

In such cases a large portion of the cost has to be estimated by means of Oncost. The best results are likely to be attained by a minute sub-division of manufacturing expenses, under heads corresponding to the processes, in the general books. Wages, so far as they cannot be charged direct to specific jobs, are a very important item, and require careful analysis.

In the Cost Books, direct wages and materials should be charged up to jobs, and the remaining elements of cost should be added by means of percentages or other rates.

A double-entry system of costing is not well adapted to these cases. A more convenient plan is to use a Cost Book ruled with a considerable number of columns, showing Job Number, Description, Quantities, Weights, &c., Direct Wages, Materials, and the amounts added for

Oncost in respect of each process. One or more lines should be set apart for each job, and the cross total will then give the estimated cost of that job. The vertical totals will give the expenditure in direct wages and materials, and the amounts charged by way of Oncost to represent the further cost of various processes during the period. These latter should be compared with the actual cost as shown by the general books. A valuable check on the estimated cost is thus obtained. The opportunity for periodic revision of estimated cost is of considerable value, as there is a great tendency for percentages relating to costs of production to become stereotyped, and to be used without regard to the fact that they may have been originally inaccurate, or have become so by reason of changes in manufacturing methods, or in the ratio of turnover to expenses.

It is not necessary, in the Cost Book, to add the estimated cost of each process by means of a *percentage*. It may be added by way of a charge of so much for each batch or article. To facilitate this method there should be provided, alongside the money columns, other columns showing the way in which the charge is made, as, for example, "12½ per cent. on Wages," "5 per cent. on Materials," "7s. 6d. per gross," "21s. per 1,000," "4½d. each," "7d. per lb."

CHAPTER XIX.

PATTERNS, DESIGNS, MOULDS, &C.

AN important part of the stock-in-trade of a Factory is comprised in the Patterns, Designs, Drawings, Jigs, Moulds, Dies, Models, and the like. The costing of these and their valuation at stocktaking are matters involving some trouble, which cannot, however, be avoided if due regard is to be paid to accuracy.

In this chapter the word "Patterns" will be used as representative of the several classes of objects used as guides in reproducing others.

In dealing with the Prime Cost of manufacture we have so far dealt only with the wages of workmen. When we come to Patterns there is a new element of cost in the shape of drawing-office or designing-office salaries and expenses. These are important items and require to be dealt with systematically.

The first requisite is that Draughtsmen should keep a record of their time in diaries, from which an abstract similar to the Wages Abstract can be compiled. The monetary value of the time, based on salaries, is thus split up over the various patterns upon which the staff has been engaged.

It will be found convenient not to mix Pattern Cost Accounts with those relating to general manufacture, but to keep them in a separate Patterns Ledger, ruled like the Cost Ledger. The columns on the debit side should be used for—

- (1) Drawing Office Salaries.
- (2) Materials.
- (3) Direct Wages (operatives).

In the Patterns Ledger an account should be opened for each pattern, just as for jobs in the Cost Ledger. In the first column, Drawing Office Salaries should be debited through the Cost Journal, and credited to Direct Salaries Account in the Patterns Ledger.

It is not necessary to charge each account with drawing office materials actually used upon it. A simpler and sufficiently accurate plan is to add a percentage to cover materials and drawing office expenses. This should be debited through the Cost Journal and credited to Drawing Office Oncost Account in the Patterns Ledger. The total of the latter account should agree approximately with the total of Drawing Office Materials and Expenses, including salaries not directly chargeable.

Timber and other materials used, and Pattern Shop wages, should be debited to the Pattern Account in the Materials and Wages columns, just as they would be charged to an ordinary Job Account. Oncost should be added to the wages when the pattern is complete. The corresponding credits should be posted to Stores, Wages, and Oncost Accounts in the Cost Ledger.

The above system provides sufficiently for the ascertainment of the cost of patterns. The next thing is to decide how the cost is to be charged to the jobs on which the patterns are used.

In the case of a pattern designed and made for a special job, its whole cost should be transferred from the Pattern Account to the Job Account in the Cost Ledger.

The case of a stock pattern is by no means so simple. Theoretically, the proper course is to apportion its cost over the number of times it will be used, but this is impracticable, for not only is it impossible to gauge the working life of a pattern with accuracy, but it is also frequently impossible to know beforehand what demand there will be for the article represented by a new pattern, so that the latter's estimated term of usefulness may never be worked out. It would, moreover, be found that under this method the cost of the most useful patterns would be worked off soonest, while that of patterns for which there is no demand would remain on the books. This would, of course, be anomalous.

Since the cost of stock patterns cannot well be charged off in detail, it is best to make a transfer from the individual Pattern Accounts to a collective account entitled Stock Patterns in the Patterns Ledgers.

As regards charging jobs for use of stock patterns the best plan is probably to do this by means of Oncost, debiting each job with a percentage, and crediting Pattern Oncost Account in the Cost Ledger. In settling

the percentage, regard should be had to the fact that not only the cost of the actual pattern used has to be written off, but also that of unsuccessful patterns.

It will, in most cases, be found best to charge Pattern Oncost on the total of materials used on the job, rather than on wages or on prime cost.

The same percentage is not always applicable, as patterns may be much more complicated and expensive in relation to the value of materials used in some cases than in others. There should be a standard rate of Pattern Oncost, which may be increased or diminished according to the special circumstances of each order.

IN THE GENERAL ACCOUNTS.

All drawing office salaries and expenses should be charged to an account entitled Drawing Office Expenses. This account should be credited with the amount of salaries charged direct to Patterns as ascertained from the Cost Clerk. The corresponding debit should be to Drawing Office Direct Salaries.

The balance of the drawing office expenses will then represent indirect salaries and expenses, and should accord fairly well with the Drawing Office Oncost Account in the Patterns Ledger. It will serve as a guide to the rate of Oncost in future periods.

When a Trading Account is prepared, it should be credited with the total of the Stock Patterns Account in the Cost Ledger for the period, and this total should be debited to Patterns, Drawings, Designs, &c., Account in the General Ledger.

This latter account should be liberally written down, and if the debits to jobs for Pattern Oncost have been sufficient, the total of that account will serve as a basis for depreciating the Capital Account of Patterns, Drawings, Designs, &c. The entry in the general books should, of course, be a credit to the last named account, and a debit to Trading Account.

The entries just described will maintain the correspondence between Cost and General Accounts, upon which stress has already been laid.

Whatever course is adopted in the Cost Accounts with regard to use of patterns, liberal provision should be made in the general accounts for wear and tear and obsolescence. The Patterns Account has an unwholesome tendency to increase year by year in consequence of heavy additions, which are not counterbalanced by sufficient depreciation. The stock of patterns may have increased in bulk and weight, but whether it has increased in usefulness, which is the true test of its value, is another matter. It will frequently be found that the number and value of current useful patterns remain about the same from year to year, and, if the Patterns Account is kept about level, it will probably accord better with actual values than one which shows a continuous increase. The 5%, which some manufacturers consider a sufficient rate of depreciation, is usually wholly inadequate to keep the account within reasonable limits.

CHAPTER XX.

SOME SPECIAL FEATURES.

CONSTRUCTION AND REPAIRS AS JOB NUMBERS.

WHEN it is desired to know the cost of constructing or repairing one's own buildings or machinery in the same way as that of an article manufactured for sale, the wages and materials expended on the work should be dealt with *in exactly the same way as those expended on other jobs.*

It is contended by some that no addition should be made for Oncost, but in the author's view this contention is not correct, for it is clear that work of the kind under discussion can no more be executed for the bare cost of labour and materials than can an order for a customer. If, then, general expenses are attributable to the cost of the work, they should be provided for by Oncost, and preferably by raising a "Special Oncost Account," in order to check the loading of the cost in respect of indirect charges.

Care should be taken not to charge Oncost in respect of expenses which are not attributable to the work. For example, in the erection of a brick building by an engineer for his own use, little, if any, wear and tear of his

manufacturing plant would occur, and the normal rate of Works Oncost should, therefore, be reduced. The object of treating the work as a job number is to ascertain its true cost, and for this reason it may be necessary to vary the rate of Oncost. It is for this reason that a "Special Oncost Account" may be necessary.

The cost of the completed jobs should be transferred, in the Cost Ledger, from the Job Accounts to the debit of New Buildings, Repairs to Buildings, New Plant, Repairs to Plant, or other account, as the case may be.

In the general accounts, an entry should be made at the end of a financial period, crediting the Trading Account with the total expenditure on buildings and plant as shown by the Cost Accounts. The corresponding debits should be to the Buildings and Plant Accounts, or to Repairs Account, as the case may be.

This entry will maintain the agreement between the two systems.

It goes almost without saying that, since no profit is made on these transactions, none should be taken credit for. The caution is, however, necessary, because manufacturers are often impressed with the idea that if they get an estimate from a contractor to erect for, say, £1,000 a building which they themselves subsequently construct for £800, they are entitled to treat the building in their accounts as worth £1,000, and to take credit for £200 profit. Sound accounting requires that the building shall be shown *at cost*.

If, through inefficient work or inexperience, it should cost more than the contractor's estimate, it would be prudent to write it down. Any writing up is equivalent to a manufacturer making a profit out of himself, and is indefensible. That "money saved is money earned" is an excellent copy-book maxim, but is not entitled to rank as a principle of accountancy. The money saved in the case under consideration will appear as money in the Balance Sheet. It should not come in again as earnings in the Trading Account.

EXPERIMENTS.

The cost of experiments may be dealt with under job numbers in the same way as Construction and Repairs.

LOOSE TOOLS.

Expenditure in making and maintaining loose tools may be dealt with under job numbers in the same way as the construction and maintenance of buildings and plant. In this case the separation of capital from current expenditure is a matter of considerable difficulty, and involves additional work which may well be saved.

The period of usefulness of loose tools varies greatly, and it is not easy to fix a rate of depreciation which is satisfactory for a heterogeneous collection of small objects. A safe plan is to charge all expenditure, whether on new tools or repairs to tools, to Loose Tools Account. At the end of a financial period, stock of loose tools should be taken, and valued on a safe basis. If this value is credited to the account in the General Ledger and brought down as a balance, the difference on

the account may be written off to Trading Account as "Maintenance of Loose Tools." This plan is simple and correct, and has the merit of guarding against the inflation of Loose Tools Account which occurs when expenditure on new tools is added year after year, and subjected to a depreciation of 10 per cent.

When loose tools are dealt with under job numbers, no great amount of additional work is necessary to separate the expenditure of each shop under this head. Having regard to the difference between the shops in this respect, the information so obtained is valuable, as the upkeep of loose tools forms an important element in the Indirect Shop Expenses, and, therefore, affects the question of Shop Oncost.

When the suggested separation is effected in the Cost Accounts, a Loose Tools Account for each shop should be opened in the General Ledger.

SYMBOLS INSTEAD OF JOB NUMBERS.

In connection with expenditure on the construction and maintenance of buildings, plant, and tools, it is convenient to distinguish the Job Accounts by symbols instead of numbers.

Thus :—

C = Construction,

R = Repairs,

and

B = Buildings,

P = Plant,

T = Loose Tools.

Then :—

B C = Construction of Buildings,

P R = Repairs to Plant.

If a further subdivision is required, each portion of the works may be designated by a letter which should precede the other descriptive letters.

Thus :—

Y P R = Repairs to Yard Plant.

M T = Upkeep of Machine Shop Tools (Construction and Repairs not being separated).

E B C = Construction of Engine House.

The first letter in each group of three, designates the part of the works, the second the object, and the third the nature of the operation.

These symbols are suggestive and easily remembered. Care should be taken to ensure that no combination can have two different meanings.

The principle of symbolic nomenclature may be extended for the purpose of identifying parts of machinery and other manufactured objects, but the matter is one which falls within the scope of a treatise on Factory Organisation rather than one on Cost Accounts.

CONTRACTS PENDING APPROVAL.

When a contract has been completed, but has not been passed by the purchaser or his agent, it is unwise to take

credit for the full amount of profit. Defects may be discovered, or unforeseen demands may be made upon the contractor, resulting in a serious diminution of profit. If the Job Account in the Cost Ledger is closed off, a reserve should be made in the general accounts of an amount more than sufficient to cover any probable expense still to be incurred in respect of the contract. It would be still sounder to treat the contract as work in progress; but this is a counsel of perfection, hardly likely to be followed by manufacturers, who are, as a rule, eager to show as much profit as possible at once, rather than allow the next period to get the benefit of it. The author has, however, known serious inroads to be made into a year's profits by the omission in the previous year to make provision for defects in contracts that had not been finally accepted by the customer.

PROFIT ON WORK IN PROGRESS.

There is not much to be said in favour of adding any profit to the cost of work in progress for the purpose of preparing a Balance Sheet and Trading Account. It is sometimes done with the idea of equalising annual profits in cases where work in progress is a large and fluctuating item, and this is the only excuse available. The amount added for profit should always be much less than a proportion of the expected total profit on the orders in course of execution. The safe plan is to add nothing for profit on incomplete work, but to let all the profit on it fall into the period in which the work is completed. Till then it must always be more or less conjectural whether any profit will be made.

SALES TO BRANCHES.

When manufactured goods are invoiced from the Works to a Branch the simplest course is to charge them at cost, but this is open to two important objections.

It is not always desirable that the cost of the goods should be known at the Works and at every Branch. It is, moreover, advisable to let each establishment stand by itself as a trading concern having its own set of books and its own Trading Account. Managers are often remunerated partly in accordance with results, and if goods are charged to Branches at cost, the manager of a Manufacturing Branch stands at a disadvantage as compared with the managers of Selling Branches, since he is only credited with the bare cost of production, and has nothing to set against his expenses of distribution, while the Branch books show all the profit on sale.

In such a case some addition to cost of production should be made in invoicing goods to Branches.

When the annual accounts of the whole business are made up, a question of principle arises from the fact that goods in stock at the Branches are valued above cost price. This is incorrect, since no real profit was made by transferring them from the Works to the Branches. One way of getting over the difficulty is to record sales to Branches and purchases from Works in books which have parallel columns for cost price and invoice price respectively. This, of course, "gives away" the cost price at once, and means a lot of work which might well be saved.

A simpler plan is to let each department (Works or Branch) prepare its accounts in accordance with invoice prices, and show the profit upon which the manager's remuneration depends. The Works should keep an account for sales to Branches separately from external sales, and each Branch should have a separate account for purchases from Works. These accounts will *balance each other* in the aggregate, and *may be omitted* when the Departmental Trading Accounts are amalgamated into a General Trading Account of the business. The latter will then contain real purchases and sales, and no inter-departmental sales. Before stocks are carried into the General Trading Account they should be *reduced to cost price*, and this account will then show the actual profit earned. This will be less than the sum of the departmental profits because it represents facts; while the others are the outcome of a bookkeeping fiction, which is made use of for the reasons stated above.

SPECIAL PLANT.

Contractors often find it necessary to purchase special plant for a particular contract. The plant after use has, of course, depreciated, and one of two things happens: either it is sold, or it is taken into stock for future use. The question we have to consider is, how the contract is to be charged for use of the special plant.

The best plan is to debit the contract with the cost of the plant and credit it with (a) the proceeds of sale, or (b) the depreciated value of the plant when taken into stock.

The necessary debit entry in the Contract Account may be made in the Chargeable Expenses column, or in an additional column headed "Special Plant," which may be provided. The credit entry may be made in red ink in the same column or on the credit side of the Contract Account. The complementary entries should be made in Chargeable Expenses Account or Special Plant Account in the Cost Ledger.

In the general accounts the purchase of the plant should be debited to Chargeable Expenses (or Special Plant) as the case may be. When the contract is completed the value of the plant should be credited to the account originally debited, and should be debited to the purchaser or to Plant Account, according to whether it has been sold or taken into stock.

"OMNIBUS" ORDERS.

In some works, particularly those of engineers, a system is followed of making a number of like standard parts at a time, for use as required. This course is economical of labour and facilitates the rapid execution of orders, but involves the employment of considerable working capital. It is not a course which can be adopted with advantage until parts have become thoroughly standardised, as a change of design would reduce the value of parts already made to that of scrap.

The order from the management to the shops to make a number of like parts is termed an "Omnibus" Order, presumably because the parts so made can be used *for all* the engines of a corresponding type which may thereafter be built until the parts are all used up.

When this plan is followed it will be found convenient to have a Parts Cost Ledger, in which the cost of each "Omnibus" Order for parts is shown, while the cost of complete engines is shown in the main Cost Ledger. From the Parts Cost Ledger the cost of a single part will be obtained by dividing the cost of a set by the number of parts of which it consists. As the order is completed, the parts will be transferred into finished stock for issue as required, or to engines which are waiting for them.

A bookkeeping difficulty arises when one part is ready before the rest and is wanted for immediate use. The "Omnibus" Order being incomplete, the cost of a single part cannot be accurately stated. The remedy is to put an estimated value on it, and allow this off the cost of the remainder when the order is complete. Alternatively, a memorandum entry (not showing the value) should be made *pro tem.*: if a note of its incompleteness is made, it can be completed later on by the insertion of the ascertained value when the order is finished.

DEFECTIVE AND SPOILED CASTINGS.

In engineering works it frequently occurs that a casting, upon which labour has been expended in the machine-shop, proves to be useless because of some inherent defect or flaw, or careless workmanship. When such occurrences are necessarily *incidental* to the nature of the work they are part of the normal cost of the job in hand, but when they are *accidental* the job should be relieved of the expense.

The method of doing this is shown by the following example.

Assume that a casting worth 4s. has been partially machined at an expense of 2s. 6d., and that it is found defective and returned to stores as scrap worth 1s.

The result of this is a loss of 2s. 6d. in labour and 3s. in material, 5s. 6d. in all.

The job will have been charged in the ordinary way with 2s. 6d. for labour and 4s. for material. It is relieved of these by the following entry in the Cost Journal, which is posted to the Cost Ledger.

Sundries		Dr.	s	d	s	d
To Job No.	6	6
Direct Wages	2	6	
Stores	4	0	

This practically takes the matter out of the Cost Accounts by transferring the previous entries back into Wages and Stores, the accounts of which are, it may be said, in communication with the General Accounts.

In the General Accounts, then, we must make corresponding entries and show the loss. The entries are made through the General Journal, thus:—

			s	d	s	d
Defective and Spoiled Castings	Dr.		5	6		
To Sundries—						
Direct Wages	..	..	..	..	2	6
Stores	..	..	..	..	3	0

The Direct Wages Account then agrees with the corresponding account in the Cost Ledger.

The Stores Accounts do not quite agree, but it is to be remembered that the accounts of stores in the General Ledger and Cost Ledger are not intended to agree, but to furnish a check on stores by representing, between them, both sides of the Stores Account. Bearing this in mind, the entries are seen to be correct, for Stores Account has been debited in the Cost Ledger with 4s. and has been credited in the General Ledger with 3s., resulting in a net debit of 1s., which corresponds with the scrap value of the casting returned to stores.

The loss by the defective or spoiled casting is 5s. 6d., and this is shown in the General Accounts. It forms one of the expenses which should be covered by Works Oncost.

To avoid the trouble of passing a Journal entry for each defective or spoiled casting, it is well to summarise them in such a way that the cross total gives the credit to the individual jobs, and the vertical additions give the totals for Stores Account in the Cost Accounts, Value of Scrap, Stores Account in the general accounts, and Wages Account in both systems. The entries in the Journals may thus be limited to one a week or one a month.

CHAPTER XXI.

THE COST LEDGER AND JOURNAL (SOME DETAILS).

PRIVATE CONTRACT LEDGER.

WHEN it is desired to withhold the profit or loss on contracts from the knowledge of the staff, a Private Contract Ledger should be introduced.

Instead of crediting the Job Account in the Cost Ledger with the contract price, the gross cost of the job should be transferred to a Job or Contract Account in the Private Contract Ledger, and that account should be credited with the contract price. The corresponding debit should be to Completed Contracts Account, also in the Private Contract Ledger. The profit or loss on the contract is then shown in this Ledger, and the account of profits and losses on contracts may be kept in it also.

As a further precaution to ensure secrecy, a Private Contract Journal should be introduced for all entries which are to be posted into the Private Contract Ledger. Both books should be provided with locks.

When the method just described is used, the Cost Ledger and Private Contract Ledger are both required to furnish the totals for a Trial Balance of the Cost system.

It is, however, quite easy to arrange for each of these two Ledgers to be balanced separately. This is done by providing in each an account for the other. Then, instead of transfers being made from one to the other through the Journal, they are made in each Ledger to an account of the other Ledger.

Thus, for instance, if a job which has cost £8,000 is to be transferred from the Cost Ledger to the Private Contract Ledger, the following entries are necessary:—

In the Cost Journal (for posting into the Cost Ledger).

Private Contract Ledger Account	..	Dr.	£8,000	
To Job No.	..	..	..	£8,000

And in the Private Contract Journal (for posting into the Private Contract Ledger).

Job No.	..	..	..	..	Dr.	£8,000
To Cost Ledger Account	..	..	..	..		£8,000

If postings to the Cost Ledger are only made from the Cost Journal, and those to the Private Contract Ledger from the Private Contract Journal, the two Ledgers are independent and capable of being separately balanced.

The Private Contract Ledger Account in the Cost Ledger, and the Cost Ledger Account in the Private Contract Ledger, should always have balances which are equal and opposite. In balancing each Ledger *separately* these balances must be taken into account, but may be ignored in preparing accounts from the two Ledgers *together*.

COST LEDGER RULING.

In this Ledger the special ruling necessary for Job Accounts is not required for finished stock and nominal accounts. It is therefore desirable to have some pages at the end of the book ruled as an ordinary "Double-Ledger."

LOOSE-LEAF LEDGERS.

These possess several advantages, which adapt them for use in connection with Cost Accounts. Completed accounts may be removed to a binder, so that the number of pages in the Ledger need never be more than are required for current use ; the convenience of having all dead matter eliminated is considerable. Indexing, either alphabetically or numerically, becomes automatic, as each new sheet is inserted in its right place at first, and is followed by any additional sheets required for the same account. This avoids the tiresome task of hunting up accounts in an index. When any particular account is required for reference it can be detached and examined at leisure with only a momentary interruption of work on the Ledger, as compared with the complete stoppage which results in similar circumstances when bound books are used. Several kinds of rulings may be used in different parts of the Ledger without the risk of one part being used up before another. The chief objection to Loose-leaf Ledgers, viz., that they lend themselves to the fraudulent removal of any of the accounts, has less weight in connection with Cost Accounts than with the financial books.

For the Cost Ledger, Stores Ledger, and Stock Ledger, Loose-leaf Ledgers, are very suitable.

THE COST JOURNAL.

A skilled bookkeeper may save himself a good many entries in this book by a judicious adaptation of certain books in the general system. Although it was stated at p. 28 that no entry in the general books should be posted to the Cost Ledger, this rule may be modified if due care is taken not to interfere with the double-entry principle of the Cost Ledger.

Thus, as regards Chargeable Expenses, additional columns may be provided in the Invoice Book, Cash Book, and Petty Cash Book, for "Job Number" and "Cost Ledger Folio." These should be alongside the analytical money columns devoted to chargeable expenses. The items need not then be transcribed in the Cost Journal, but may be posted direct to the Job Accounts, and the total of the column should be posted to the credit of Chargeable Expenses in the Cost Ledger.

Direct Goods may be dealt with in the same way.

Similarly Job Accounts may be credited direct from the Completed Contracts column of the Day Book, and Completed Contracts Account in the Cost Ledger may be debited with the total.

When these short-cuts are adopted, the columns in the general books which are used for posting to the Cost Ledger should be regarded as part of the Cost system, as well as of the general system.

CHAPTER XXII.

MISCELLANEOUS.

PRICE BOOK AND STORES INDEX (FORM 14).

THIS is a valuable adjunct to a system of Cost Accounts. It should be large enough to last some years, as the writing-up of a new book is troublesome. It should be indexed throughout (*i.e.*, the index lettering should be cut-in according to a scale of probable requirements). This is much better than having an index at the beginning of the book giving reference to pages. When entries are numerous, reference is facilitated by a subdivision of the index under vowels. Any printer will know the term "vowel-index." The idea is to index the entries primarily under their initial letter, and secondarily under the first vowel in the word. Thus "Centre-bit" would be found in Section C, Sub-section E; "Bricks" in Section B, Sub-section I; "Indigo" in Section I, Sub-section I. At the end of the book there should be some extra pages to take the overflow of entries from any sub-section which may become full. These pages should be numbered, so that they may be referred to in a note at the end of full sections.

In Form 14 the first five narrow columns are for prices; in the case of articles liable to frequent alteration, one or more lines should be left after the name of the article. The

sixth column is for the number of the bin or letter of the room in which each article is kept, or both. Thus A 29 would mean that the article is in Room A, Bin 29.

Another good method of sub-indexing is to have a set of twenty-six vertical columns, each headed with a letter of the alphabet. The place of each item is governed by the third letter in its name. The name is written so that it begins in the column corresponding with the third letter. Thus, as shown in Form 14 (a), Chisels comes under "I," Cogwheels under "G," Cast Iron Bends under "S," and so on. Thus, by running the finger down the appropriate column, the required item is quickly found. The sub-division being distributed over the whole alphabet is more minute than in the case of a vowel-index.

This method of indexing is known as the vertical-alphabetical system, and has been copyrighted by the Copeland Chatterson Co.

STOCK LEDGER.

This is used for Finished Stock, as distinguished from Stores. It is worked on much the same lines as the Stores Ledger (Chapter XVI.). The *Dr.* side is written up from the Finished Stock Transfers, and the *Cr.* side from Finished Stock Requisitions, and also from demands made on the stock as required for sale.

CASH DISCOUNTS.

In determining the price at which materials are to be charged to jobs, the invoice price, less *trade discount*,

should be used. *Cash discounts* should not be deducted. The simplicity and convenience of this course are apparent. It is, moreover, correct, for *cash discounts* are affected by punctual payment, which is a matter of finance and not of costing, and is more or less contingent and uncertain.

PRINCIPAL'S SERVICES AND INTEREST.

No charge should be made in Cost Accounts for the services of a principal, nor for interest on his *own* capital. Whatever return is produced by these is profit, and not an expense of manufacture.

As regards interest on *borrowed* money, some difference of opinion prevails as to whether it should be provided for in Oncost. It is no doubt an expense of the business, but it is a matter of finance rather than of manufacture, and, as such, should probably, like discounts, be kept out of the Cost Accounts. The point is not very material so long as the manufacturer knows whether his gross cost does or does not cover interest.

JOB NUMBERS.

It is very important that provision should be made for connecting the name of a job with its number. For this purpose it is advisable to cross-index all jobs, first showing each one in alphabetical order with its number, and then in numerical order with its name.

When Works and Head Office are situate at a distance from each other, each will want its own series

of Job or Order Numbers, if orders are taken at both places. If the Head Office sends an order to the Works it may have to be re-numbered there, and it is necessary to prevent the clashing of numbers, and also to establish a relation between the two series, so far as numbers in each relate to the same orders. The fact that H/O O. No. 257 refers to the same job as W.O. No. 198 is not easy to commit to memory, and the symbols are clumsy. If all H/O O. Nos. are *odd* and all W.O. Nos. are *even*, the prefixes H/O and W. may be dispensed with. If the Works are instructed to give each order from the Head Office the *next* number, and the Head Office gives each order transferred from the Works the *preceding* number, then O. No. 257 at the Head Office must refer to the same job as O. No. 258 at the Works, and it is at once apparent which is the H/O O. No. and which the W.O. No. A little method in setting aside a group of numbers—say, 502-1,000—for orders originating at the Works, while the Head Office use numbers 1-499, will prevent any confusion or duplication of numbers. When the Head Office reach No. 499 they will begin again at 1,001, and when the Works reach No. 1,000, they will begin again at 1,502. Thus the number alone will indicate whether it relates to Head Office or Works, and at which place the order originated. The series of numbers at each place will have gaps in it, but that is a matter of small importance.

FILES.

Care and system in filing save a great deal of trouble in reference. Separate files should be provided for

Requisitions, Credit Slips, Finished Stock Requisitions, Finished Stock Transfers, the Material Abstract, the Wages Abstract, &c. Files which tear a hole in the paper, or which provide no ready means for detaching any that may be required, should be avoided. Those which are used in conjunction with a two-hole piercer, and are provided with staples on the "Shannon" principle, are good. "Apron" and "stick" files are best left alone.

"SUBBING."

The practice of "subbing" or making advances to workmen on account of current wages is to be discouraged on several grounds. If "subs" must occur, they should not be allowed to interfere with the wages system. The advances should be made by the Petty Cashier, and should be repaid to him out of the wages money by the Pay Clerk, who stops the advances out of the workmen's money. It will be a good plan for the Petty Cashier to have a special column for "Subs" in his Petty Cash Book. The Wages Book should also contain a similar column, and the two can be readily agreed. The totals of these columns, when posted into the General Ledger, will cancel each other, and leave no balance on the "Subs" Account, unless any items are outstanding.

COST OF MATERIALS.

When carriage, freight, duty, and other charges are paid on materials purchased, the cost is thereby increased. These expenses should, therefore, be charged to Direct

Goods or Stores Account, as the case may be, in the general books, and in fixing the price at which the materials are to be charged to jobs a proportionate addition to the invoice price should be made.

SCRAP.

Filings, turnings, and small scrap need not be credited to the jobs from which they come, unless the metal is a valuable one, but may be placed indiscriminately on the scrap heap. Sales of scrap may be treated in the general books as in reduction of works expenses.

CHAPTER XXIII.

CONCLUSION.

It is regrettable that Costing receives so little attention at the hands of manufacturers, and that the class of men employed in keeping records of manufacturing cost is not, as a rule, such as to ensure an intelligent application of principles.

At the root of the matter lies the fact that expenditure on the necessary clerical labour is not directly reproductive, and this is the objection which, more than any other, stands in the way of the development of a branch of accounting which is of the highest interest and importance. The advantages of the knowledge resulting from a well organised system are so great that the extra expense it entails may well be considered indirectly, if not directly, reproductive. The increasing keenness of competition furnishes an argument which may be used with equal force on both sides, and is certainly not a complete answer to the plea for better accounting.

When Cost Accounts are imperfect, estimates must take the place of recorded facts, or, to put it somewhat baldly, guesswork has to do duty for knowledge. The manufacturer who succeeds on these lines may come to the conclusion that properly kept Cost Accounts are a needless luxury. One sometimes comes across a totally

illiterate trader who has made a fortune, but it would be unreasonable to deduce from this that the elements of education are of no use in commerce. *Post hoc* is not the equivalent of *propter hoc*, and success is not obtained because of manifest disadvantages, but in spite of them.

It must be an immense advantage to a manufacturer to *know* how and where, and to what extent, he makes a profit or a loss. He can only do this by means of Cost Accounts. With the detailed knowledge they convey he is as much ahead of a rival who knows only the general results of his business, as the modern physician, who after diagnosis directs his attention to the part affected, is superior to the old-time leech whose crude remedies assailed the whole system.

Accountants cannot altogether escape responsibility for the undeveloped state of costing in this country. Many of them do not consider the subject as being within their province at all. The manufacturer is thus often left to do without Cost Accounts, or to institute a system, in the designing of which he has not the aid of a professional accountant who can bring to bear the skill and knowledge required for this most difficult branch of accounting. Considering that the designing of a successful set of commercial books is beyond the powers of most persons outside the accountancy profession, it is small wonder that an amateur costing system often leaves much to be desired.

A certain antagonism is often found between manufacturer and accountant. The former is afraid of being run into too much expense, and the latter is apt to forget

that his first duty is to provide his client with the information he wants, and not what he (the accountant) thinks he ought to want. An obstacle which accountants sometimes have to contend with is the objection which some officials have to their estimates being subjected to the rigid test imposed by an exact system of Cost Accounts. This leads to difficulties being thrown in the way of the proper working of the system. The Cost Accounts will tell the truth, and tell it in circumstantial detail. This is invaluable as a guide to future estimates, but is by no means so acceptable to officials when applied to a comparison of their past estimates with actual results. The cost accountant, like the auditor, is often regarded as a natural enemy, instead of the friend he would be, if he were allowed. The best results can only be secured by co-operation between the manufacturer, his staff, and the accountant, not only in designing the system but in carrying it into effect.

The criticisms contained in the foregoing pages, of some misconceptions on matters of account which find a place in the minds of commercial men, are made in no captious spirit, but for the purpose of presenting views suggested by the author's experience as an accountant, which are, perhaps, worth the consideration of those who have hitherto regarded the matter from a different standpoint. It is hoped that they will be received accordingly by any manufacturers into whose hands this volume may fall.

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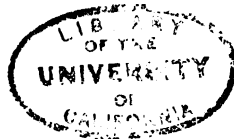
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